Bird with cover on

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BLUE HERON COLONIES IN NORTHERN OHIO

BY E. L. MOSELEY

Most people have never seen a nest of a Great Blue Heron, although they may often have seen one of these majestic birds flying along a stream or standing on one leg in a marsh, patiently waiting a chance to spear a frog or fish. They have been told that these birds were cranes. I had been teaching classes in zoology and making observations on Ohio birds for nearly thirty years before I learned the location of any herony in the state. In later years, as the result of considerable inquiry, I have heard of thirty or forty nesting sites of Great Blue Herons (*Ardea herodias herodias*) and have visited many of them myself. The largest is in Sandusky County, nine miles northwest of Fremont, in woods belonging to Horatio and Harry Waggoner. Fortunately these men are interested in the preservation of the birds, which are favored also by having their home in a law-abiding community, where no one attempts to shoot them.

On May 2, 1935, before the leaves had come out on the trees, I went to the Waggoner woods with a large number of students from Bowling Green. With their aid and also help from Horatio Waggoner and his son John, the heronry was divided into eight strips, running east and west, each several rods wide. The lines bounding these strips were followed by tall men who did no counting, but aided those who did the counting to keep within the lines. If a tree containing nests was on the line, they saw that it was included in only one list. Thus we avoided duplications and omissions. One thousand one hundred eighteen nests were counted. As some nests had only recently been started, probably a few more were built after we made this count. If any of the nests counted were unused in 1935, the number was probably very small.

We saw egg shells on the ground that day and Mr. Waggoner heard one or two young birds. The first of the herons he had seen arrived from the south on March 10. The previous year, 1934, and also in 1932, a few arrived March 1. In earlier years the first arri-

vals observed were usually about March 15, or 20, other individuals coming later, some not arriving until about the middle of April.

Nests used the previous year are repaired, if not too dilapidated. As the colony has been increasing, many new nests are built each year. They consist of platforms of sticks, most of which are smaller in diameter than a finger. Sweet clover or other herbaceous stems are used to line the nest, which is shallow and two and a half feet or more in diameter. After about four weeks each nest becomes the home of two or three baby herons usually; but the number may be more than three, or only one.

To feed between two and three thousand nestling herons enough to enable them to attain in five weeks the size of their parents requires considerable activity on the part of the latter. After the young are half grown, a ton of fish a day would probably not satisfy them. Only a trifling amount could be obtained within six miles of the heronry. Probably half of the whole supply is carried a distance of fourteen miles or more. Many persons have wondered why these birds choose for a home a locality so remote from their food supply. The reason is that woods containing a large amount of tall trees suitable for their nests are not to be found nearer to the water in which they obtain most of their food. Like other gregarious creatures too big to hide, these birds and their young are safer when many are close together, because enemies are less likely to attack them or to succeed if they do attack. Charles Holloway has told me of seeing a large dog repulsed by a Great Blue Heron whose wing had been injured so it could not fly. The dog rushed at the bird, which dealt it one savage blow on the nose. This took all the courage out of the dog.

A visitor to the heronry in summer is likely to hear the thud of a fish falling to the ground only a few yards from where he stands and he wonders why the birds lose so many after carrying them so far. If the falling of fish went on all through the day as fast as when visitors are present, the young birds would starve, for the fish that fall are not recovered. Evidently the presence of visitors causes the loss. I used to think that fright confused the birds so that the fish was lost in transferring it from parent to offspring, but I have observed it when I believe only the young were at the nest and when they had passed the tender age when they receive partly digested food directly from the throats of their parents. Many of the fish found on the ground under the nests are almost whole. Perhaps it is instinctive with young herons, when they seem to be in danger from some enemy,

FIG. 1. The Waggoner Heronry. Seventeen nests in this tree.
Photograph by Robert L. Baird.

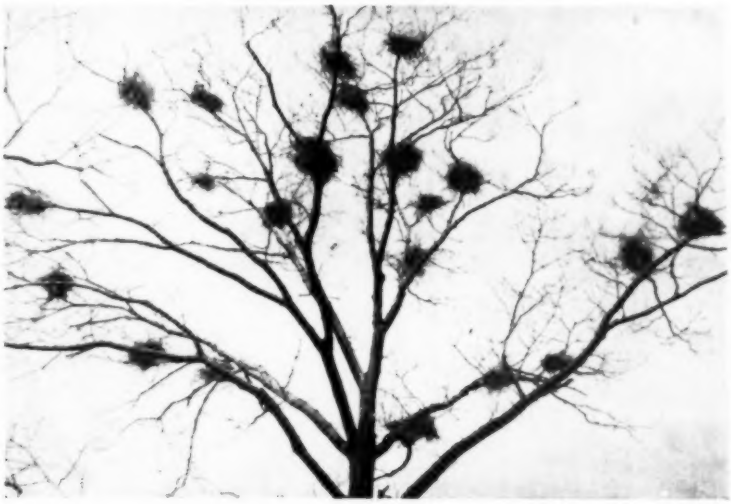

FIG. 2. The Waggoner Heronry. Twenty-two nests in this tree.
Photograph by Robert L. Baird.

to regurgitate what they have swallowed; in this way the appetite of the hungry predator might be appeased.

The fish found included sheepshead, sunfish, sucker, carp, and goldfish, the last not at all uncommon. Recently we found a catfish about eight inches long whose stout pectoral spines stood out prominently on each side. My colleague, Dr. C. H. Otis, recently watched a mature heron while it cautiously swallowed, head first, a bullhead which he estimated weighed a pound and a half, but we think the bird which brought the catfish to the heronry was not very considerate of the welfare of its offspring.

Horatio Waggoner has found an explanation for herons standing on one leg when fishing. More than once he has seen them put the other foot down and hold a luckless fish that swam close to the foot which had been supporting the weight of the heron.

That such large heronries are no longer common may be due to the difficulty of supplying a sufficient quantity of food for the young. To secure a ton of fish each day for several weeks requires extensive fishing grounds. Now that frogs are in demand for human food the supply of these amphibians has become much depleted. Snakes and lizards are getting scarce and the draining of swamps has curtailed the supply of various kinds of aquatic food. In this part of Ohio the herons have become so numerous that they are pressing on man's food supply by taking fish from the ponds. Some of the wholesale fishermen have obtained permission to shoot herons found robbing their nets.

In 1912 or 1913, the first year that any herons nested there, Mr. Waggoner says most of the nests were built in two sycamore trees. In his woods large sycamores are not numerous, so that various other trees are now used, most of them larger than the largest trees of the same kinds in a majority of the woods remaining in Ohio. We have observed nests in four kinds of oak—red, black, white, and bur—also in silver maple, shell bark hickory, ash, and in many elm trees. One bur oak in 1931, had twenty-two nests. In 1932 one red oak contained eighteen nests and another twenty-three. This is the largest number we have ever counted in a single tree, but some years ago Mr. Waggoner counted thirty in one sycamore tree. The 1118 nests counted in 1935 were in 194 trees, but 490 of the nests were in thirty-seven trees, each of which had more than nine nests. Only eleven trees contained more than fourteen nests each.

A silver maple tree which had died was cut down in order to utilize the timber in it. In the top were several heron nests. With

steel tape we found that they had been 110 feet above the ground. The highest of the nineteen nests in a big sycamore tree was found by the method of similar triangles to be 120 feet from the ground. What appeared to be the lowest nest in that vicinity had an elevation of seventy-six feet. In the entire woods there are probably a few that are somewhat lower. The nests are apparently placed as far from the ground as adequate support can be found. Trees with open tops seem to be preferred, as their limbs do not interfere with flight.

In the Waggoner woods the mature herons are never seen on the ground. The bushes and other undergrowth would probably interfere with these large birds rising from the ground; presumably they must have a clear space from which to take off. If by mischance a nestling should get down on the ground in the woods it would starve. In fields south of the woods we have seen mature herons on the ground. They do not appear to find food there. Mr. Waggoner thinks that they resort to these fields to the leeward of the woods to avoid the chilling effects of a cold wind from the north.

In the museum of the University at Bowling Green is the unbroken shell of a heron egg which we found on wet ground in these Waggoner woods May 7, 1926, when it was still fresh. It had probably fallen more than seventy feet. By the first week of July many young herons may be seen standing on or near the nests, a few of them testing their wings as if about ready to fly. Fewer old birds are seen at the heronry during the day in July, but between 5:30 and 7:00 P. M. they sail in from the distant fishing grounds with a cargo of food for the lusty youngsters. Some fish are brought as late at 9:30.

In 1930 there were still very many herons at the heronry on August 3; but when the woods were visited by one of my students a week later, no herons were seen or heard. This heronry is always deserted in August, but many of the birds continue to frequent the streams or marshes of northern Ohio until October, and some still later; rarely has one been seen in December.

The colony in the Waggoner woods has grown so large that the herons have already appropriated most of the trees which are suitable for their nests. In 1933 they built six nests in a tract of woodland about a half mile to the south, and the next year built more nests in those woods. On May 5, 1935, I counted 151 nests in this new colony and found egg shells under some of the trees and the air bladder of a fish, showing that there were already young herons in some of the nests, although a few nests had not yet been completed. Forty-four

trees, most of them American elms, contained from one to ten nests each.

An older colony, started about 1924, in woods one mile south of the bridge which crosses Sandusky Bay is also probably an offshoot from the Waggoner colony, for Sandusky Bay has long been a fishing ground for Great Blue Herons and those frequenting the western part of the bay, if not the entire bay, probably had their home in the Waggoner woods until the bay bridge colony was founded.

Among the other heronries in Ohio which are occupied exclusively by Great Blue Herons I know of none which have had so many as a hundred nests at any time in the past ten years. Very few now contain as many as thirty nests, but quite a number have between fifteen and thirty. Just over the line in Michigan, about sixteen miles west and north of Toledo, is a heronry in which I counted 129 nests May 31, 1931, probably overlooking some because of the foliage. The following spring, before the leaves came out, Reverend Hammond, of Berkey, Ohio, which is near these woods, counted 214 nests. This colony, like the one in the Waggoner woods, has been growing, especially in the last few years.

Great Blue Herons were numerous until their breeding places were visited by hunters whose ambition was to kill something big. Their numbers then were greatly reduced, but in recent years, on account of protection by law and a growing interest in bird life, the herons have been multiplying. At the heronry at Indian Lake in Logan County some have been shot by lawless hunters in recent years. At the heronry in Trumbull County, near Orwell, where there were said to be about sixty nests in 1930, sixteen of the herons were shot by one man who afterwards was prosecuted and made to pay a fine of $25 for each heron. Few, if any, nests longer remain at that place, but in most places, thanks to laws backed by public sentiment, the birds are permitted to rear their young unmolested. Very few are likely to be killed by other birds or by mammals, for with their long, sharp, straight beaks these big birds are able to defend themselves and their young. They have been increasing in numbers, in Ohio, and other states, but the increase has been restricted by the limited supply of food and to some extent also by the remoteness from their fishing grounds of any woods that are suitable for a large heronry.

Great Blue Herons seem to show some preference for sycamore trees, but very tall deciduous trees of any kind are used, if there are enough of them in a single woodland near the source of food. The woods need not be low or wet, if they are near a food supply and far

from traffic. A majority of the nesting sites are in low wet woods, but this is because woods near a large supply of aquatic food are more frequently of this character. In Huron County, six and a half miles south of Monroeville, far from roads and houses was a heronry which a few years ago contained about forty nests in eight sugar maple and two beech trees on hilly ground where foxes had a den. Nearly all of the large trees in the woods were of these two kinds. This was too far from Lake Erie for the herons to go there regularly for fish and the low water in the Huron River in recent summers has probably been the primary reason for this heronry dying out.

East of Springboro, in Warren County, is the only nesting site for Great Blue Herons which I know of in southern Ohio. The birds began nesting there about 1927. On August 14, 1932, we found twenty-six nests, of which twenty-four were in second growth beech trees, tall but less than a foot in diameter. The woods are on ground which is 950 feet above sea level and slopes away in all directions, except toward the northeast. They probably afford more seclusion for the herons than they could find anywhere closer to their food supply, which comes from the Great Miami River, five miles away, and from the Little Miami, six miles away.

In Sandusky County about twelve miles farther from Lake Erie than the Waggoner heronry, I found March 22, 1931, twenty-two nests in the tops of eight elm trees, there being few other large trees in these woods. In the Goll woods near Bean Creek, in the southwestern part of Fulton County, where for years there have been between fifteen and thirty nests, all are in large bur oaks, although a tall cottonwood near one of the oaks formerly contained a nest. Long ago when there were cottonwood trees that towered above other trees, they were favorite nesting sites of Great Blue Herons. Now elm and bur oaks are the trees most used.

On visiting various heronries one is impressed with their isolation from the busy world around. It seems as if the birds had tried to get as far as they possibly could from public roads and human habitations, or else where a person would need rubber boots or a boat in trying to reach the place.

Black-crowned Night Herons have shared some of the nesting sites, for a time, with the Great Blue Herons. Their flimsy nests are usually in small trees and not so high as the nests of the larger birds. So far as I know they do not resort to the same nesting site very long. The trees they use are killed in a very few years by the excrement. More slowly this fate befalls the big trees that hold considerable num-

bers of Great Blue Heron nests, but in such big timber as they were accustomed to select the growth of medium sized trees kept up with the destruction of the large ones. Before the coming of white settlers, such a forest may have formed a harbor for these majestic birds every summer for more than a century.

We know that several of the present nesting sites were first used by the herons after the big trees in the woods which they had previously been using were felled by the axe or destroyed by fire. The same is probably true of many whose history we have not learned. In most cases we do not know when the birds began to use the earlier nesting sites. One of my students, whose father owns part of the big woods which the herons used before they began nesting in the Waggoner woods three miles farther south, told me that these birds were nesting there when her father's great grandfather was a young man. This was about 1840. For how many years previously they had been coming to those same woods we can not tell.

The big heronry northwest of Toledo has been maintained in the same place for half a century. Until 1871, the year of the great Chicago fire and of many very serious forest fires, herons nested in cottonwood trees in heavily timbered swampland about four miles northwest of the present heronry. Fire destroyed these trees and the birds then began nesting in cottonwoods in a tract of timber about one mile to the northwest of the present site. Some fifty years ago that tract was cut over and all the very tall trees removed, causing the birds to take up their abode where the heronry is now.

Until about 1890 there was a large heronry in Gorham Township in the northwestern part of Fulton County, in a woods consisting of five or six acres; in large cottonwood trees along Bean Creek there are said to have been some 250 nests. At present, and for many years past, the food supply here has been quite inadequate for such a large heronry. Indeed a person unfamiliar with the region would wonder how such a large number of these great birds could ever have maintained themselves there. But formerly thousands of acres of what is now fertile farmland were covered with water from early spring until July or later. Frogs and fish were abundant. Clark Powers who still lives there remembers that his father often caught a bushel of fish at a time with a gill net or sieve, and would put the small ones back in the water. Fish abounded not only in the natural streams but also in ditches and ponds and they spread into the water that covered the land, where many perished and stank. Until it was dredged, the Bean Creek contained more fish than it does now.

Changes in drainage would not have brought about the complete extirpation of this large heronry so soon but in addition to depletion of the food supply the birds suffered persecution from unscrupulous hunters. Men and boys used to go to the nesting site on Sundays and shoot herons for sport, never eating any of them, although from a few they cut the wings to be used in dusting shelves. Some of the hunters would shoot as many as twenty-five herons in one day. Even such persecution might not have wiped out the heronry entirely, for the inhabitants were not bent on getting rid of the birds, but the felling of the big cottonwoods in which they had made their nests year after year put an end to what had been, so far as we know, the largest heronry in the interior of the state.

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FOOD OF THE LIMPKIN

BY CLARENCE COTTAM

Because of its peculiar distribution and unique feeding habits, the Limpkin (*Aramus pictus pictus*) is one of the most interesting of North American birds. In habits it seems to partake somewhat of the characteristics of both the rail and the heron. Like the rail, it runs rapidly and stealthily on the damp ground and frequents the borders of wooded streams and swamps; like the heron, it perches in trees.

In distribution the bird is restricted to the Okefenokee Swamp in southern Georgia and to Florida. Over much of its range it is absent or rare and is common only locally where the food and environment are to its liking. Perhaps the principal factor responsible for its discontinuance and spotty distribution is its peculiar and restricted food. It feeds primarily on a large fresh-water snail of the genus *Ampullaria*, and is, therefore, largely restricted to places where this snail is sufficiently abundant to afford adequate sustenance.

It has generally been assumed that the bird feeds exclusively on this gastropod. Howell in his excellent book on "Florida Birds" (1933, page 200), states that the Limpkin subsists entirely on this one genus of mollusk. A recent but brief inspection at Wakulla Springs, Florida, gave convincing evidence that it also takes other foods. Along the Wakulla River the Limpkin is locally common. *Ampullaria depressa* likewise is common, as are the fresh-water mussels (Unionidae).

It seems to be a common habit of the bird to feed at given points or stations. At such places a large pile of empty shells could be seen,

perhaps sufficient to fill a half-bushel basket. Each of these feeding stations, while containing many *Ampullaria*, also contained a few empty and broken shells of the Unionid bivalve (*Lampsilis vibex nigrina*). Two guides along this river, who have opportunity daily to observe the birds ,informed the writer that while the species fed primarily on the large snail, it also occasionally fed on mussels and other material. From field observation it seemed apparent, therefore, that while the birds subsist largely on this one genus of fresh-water mollusk, they obtain a small part of their food from other sources.

Dr. Henry Bryant made careful observations of the bird in Florida and wrote in the Proceedings of the Boston Society of Natural History (Vol. VII, p. 13, 1859) that: "On the St. Johns (Fla.) it feeds principally on a species of *Natica*, which is extremely abundant, and also on the small Unios. The large green snail, so common in the Everglades, is not very often met with on the St. Johns. Its manner of feeding is to hold the shell in one of its feet, and then with a few blows of its powerful bill to detach the animal, which it immediately swallows. All the specimens I killed had the stomach filled with the more or less digested remains of various mollusks—principally Unios."

Thirty stomachs of the birds collected over many years from various localities have been examined in the Biological Survey laboratory. Of these, twenty-one were filled with the fleshy content of a gastropod that appeared to be *Ampullaria*. Some of them contained small bits of the mollusk opercula, only three of the stomachs containing even a trace of anything other than this gastropod. Five of the stomachs and gullets contained, twenty-five, twenty-four, fifteen, twelve, and ten snails, respectively. One stomach contained ten or more gastropods of the genus *Campeloma*. The other eight stomachs contained unidentifiable fleshy parts of mollusks, most of which appeared to be gastropods, probably *Ampullaria*. Of the thirty stomachs examined, the fleshy part of mollusks comprised 100 per cent by volume of the food content in all but one stomach, and in that exception it comprised 99 per cent of the total food. The other one per cent consisted of weed seeds and insects. Weed seed (*Polygonum*, *Ambrosia*, *Panicum*, *Myrica*, *Sisban*, and *Cephalanthus*) occurred in six of the stomachs, but amounted to only a trace of the total food content.

From stomach examination it will, therefore, be seen that 70 per cent of the total food was believed to be *Ampullaria*, while 3.33 per cent was identified as *Campeloma* and 26.66 per cent was unidentifiable

mollusk flesh, probably most of which was *Ampullaria*. Identification in this instance was made more difficult because only the fleshy part of the animal had been consumed. Plant fiber or seed fragments made up but 0.01 per cent of the volume of the total content.

U. S. Biological Survey, Washington, D. C.

EGG LAYING BY THE COWBIRD DURING MIGRATION

BY THOMAS D. BURLEIGH

Centuries ago Solomon wrote, "there is no new thing under the sun", and yet from time to time events transpire that seem to reveal a new thing. Interest in bird study during recent years has revealed much that has long been merely conjecture concerning the life histories of some of our familiar birds, and the acquired facts have usually corroborated earlier opinions of what actually happened. Yet exceptions do occur. And in the case of the Cowbird, a species already marked by its unique breeding habits, it would appear that there is some justification in considering recent knowledge of its actions during spring as something "new".

A study of the range of the Cowbird (*Molothrus ater ater*) in the southeastern States shows it to be a common migrant south of Virginia. According to the fourth edition of the A. O. U. Check-List it does not breed on the Atlantic slope south of central Virginia, and actual records of eggs or young in that State are scarce. Like the other blackbirds, it is a hardy species and in the fall normally lingers in the northern States well into October and frequently much later. Despite these facts, however, young birds have appeared in the southern States with unfailing regularity in July, and their occurrence during summer both in the Carolinas and in Georgia has presented rather a perplexing problem. Arthur T. Wayne in his "Birds of South Carolina" has commented on the occurrence of Cowbirds at Charleston as early as July 25, and Dr. Herbert Friedmann in his monograph on this species states, "It is very puzzling to find that in the Southern States the first migrant Cowbirds are seen as early as the end of July."

During nearly ten years spent at Athens, Georgia (from September 1920 to January 1930) I frequently found this species appearing in the open fields and pastures shortly after the middle of July, my earliest record being July 17, 1928. Specimens collected proved to be fully grown young birds of the year, but at the time the significance of this fact escaped me.

In the course of field work carried on in western North Carolina, from January, 1930, through August, 1934, I again found Cowbirds appearing with unfailing regularity early in July in pastures about Asheville. As this conformed with the habits of the species farther south, little thought was given at the time to these early summer records. In fact, any explanation of this early summer movement of the birds would probably have been given little consideration had it not been for the unexpected discovery of the actual breeding of this species near Asheville. On June 10, 1933, Ernest Lyda, a local bird enthusiast, brought me a week-old fledgling taken from a Red-eyed Vireo's nest that, because of its size and actions, he suspected of being a young Cowbird. His surmise proved to be correct; and as this record extended materially the breeding range of the species, an attempt was made to determine whether eggs were being laid by more than one pair. Oddly enough no adult birds could be found anywhere despite a careful search of all suitable spots, and it was then that the thought that these birds might lay eggs in migration first suggested itself.

Further verification was, of course, necessary, and in 1934 a detailed study was made of the occurrence of the Cowbird about Asheville during the spring and summer. As in previous years, flocks of varying sizes were numerous during March and the first half of April. There was then a steady decrease in the numbers observed, and on May 4 the last individual was recorded, a male, feeding in an open pasture. In the following two months a systematic survey was made of all areas where these birds might occur. Open fields and pastures, farm yards, and all spots where cattle or other livestock might be grazing were inspected, but with no success. No adult Cowbirds were seen, and farmers who were questioned invariably expressed an opinion that the birds were not present during summer. It was of decided interest then to find early in June two Red-eyed Vireos' nests that had been parasitized by Cowbirds and that held a fledgling and an addled egg, respectively. These were near Weaverville, the place where the first fledgling had been taken, so the surrounding open country was subjected to an especially careful search, but no evidence was noted of the presence at that time of any adult birds. Early in July, as in past years, Cowbirds made their appearance about grazing cattle in pastures about Asheville, and a close scrutiny of these birds showed that all of them were fully grown young of the year. On August 2, twelve that were without exception young birds were seen in a field in the open Mills River Valley, and up to the middle of September no adults had been noted.

According to this evidence it would seem probable that Cowbirds actually do lay eggs in migration. It is realized that this suggests a situation without a parallel in the bird world but it would be difficult otherwise to reconcile the fact that young birds and eggs have been found in the nests of such species as the Red-eyed Vireos with the additional fact that adult birds could not be found during late spring and early summer despite the most diligent search. Fortunately the Cowbird is a relatively conspicuous bird during the breeding season, and because of its preference for the more open country is not easily

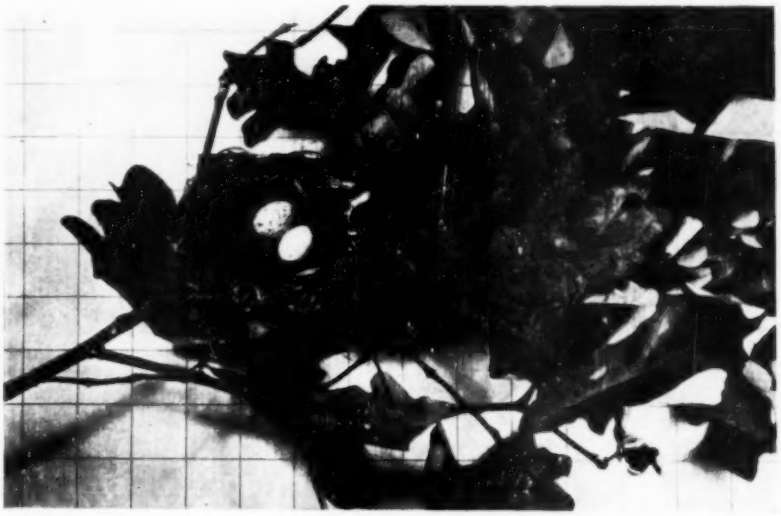

FIG. 3. Nest of the Red-eyed Vireo which contains an addled Cowbird's egg. Asheville, N. C., June, 1934.

overlooked. Of some species I would hesitate in being positive concerning their actual status, but I am confident that I did not overlook any Cowbirds.

My conclusion that the Cowbird lays eggs during its migration would explain the presence of the birds during summer far south of the range of the adult birds during the accepted breeding period, and would solve a problem that has long puzzled bird students in the southern States. It would also account for the supposed breeding records from Florida and Georgia that until now have been discredited, but that may thus prove to be authentic. An example is that of the Cowbird's egg included in a collection of eggs from Wayne and McIntosh Counties, Georgia, on the basis of which Ridgway gave Georgia as the southern breeding limit of the species. This was ques-

tioned by Wayne in his "Birds of South Carolina", and later was considered an error by Dr. Friedmann in his discussion of the present range of *Molothrus ater ater*. Personally I would be inclined to accept such a record as this, in view of the evidence I have just summarized, and include at least Georgia in the breeding range of this species. In this connection it is of interest to note that the host was a Red-eyed Vireo, agreeing in this respect with the preference shown in western North Carolina.

Further study is desirable and additional data should be secured to settle the question as to whether Cowbirds do lay eggs during migration. Bird students south of the now accepted breeding range of the Cowbird should note carefully the spots where the last migrants were observed in spring, and later, within a reasonable radius of such places, attempt to find as many nests as possible of such species as might possibly be parasitized. An occasional egg or nestling may reward such efforts, and ultimately reveal the proportion of Cowbirds laying in any one locality during migration. It is obvious that in the northern States it would be impracticable to try to determine where individual birds had laid.

In conclusion I might state that a seeming argument against this theory of laying during migration is the admitted appearance from time to time of adults, either male or female, in such states as South Carolina or Georgia early in summer. George E. Hudson has recorded an adult Cowbird observed at Clemson College, South Carolina, on June 17, and I personally have two such records for Athens, Georgia, for the middle of July. Such birds, however, are few and far between, and it is known that the post-breeding wanderings of many northern species frequently result in their occurrence in the southern States in June. The occurrence of a bird at a certain spot late in spring is always suggestive of a breeding bird, but unless the nest is actually found there is always the probability that it is a nonbreeding individual or one that has already finished nesting.

U. S. Biological Survey, Washington, D. C.

EPISODES IN THE LIFE OF AUDUBON IN INDIANA

BY S. E. PERKINS III

I.

We must ever speculate on the gist of the interesting exchange of experiences that took place at Clarksville, Indiana, opposite Louisville, Kentucky, and in sight of the famous Falls of the Ohio (the site of which town is now mostly washed into the river), when John James Audubon and his family visited Gen. George Rogers Clark in his home there. Neither made any notes upon these social calls that are extant. Each was a collector at first hand of the natural history facts to be observed in the fastnesses and swamps of lower Indiana. They both had much in common for they had each traversed the same regions of the state. It is too bad that no records were made by either about the calls of the traveler-naturalist Audubon upon the soldier Clark, which occurred on some of Audubon's many trips up and down the Ohio River between 1807 and 1818. Gen. Clark died in the last named year.

II.

After coming across an experience of Audubon in southern Indiana between 1811 and 1817, having to do with a law suit which he brought, I searched several biographies of Mr. Audubon but found no references to it.

It seems that sometime between the above dates John James Audubon desired one hundred raccoon skins, presumably for resale through his store in Henderson, Kentucky, so he crossed the town ferry and entered into a contract with a huntsman and trapper who lived on the Indiana side of the Ohio River across from Henderson, to furnish him these skins by a certain date. When the man failed to fulfill his agreement Audubon sought Jack Anthony, a Justice of the Peace in the Indiana township opposite where Audubon then lived, and brought suit for breach of contract. The defendant appeared on trial day and in his defense alleged that he had proceeded in good faith to carry out his part of the contract but unfortunately in felling a tree he had killed his hunting dog; that without the assistance of his hound he was unable to capture raccoons at the speed required to fulfill the contract. He further answered that he applied to the plaintiff, Audubon, for the use of his dog "Dash", but that Audubon had refused to loan the animal to him, and that therefore he was unable to comply with the terms of his contract.

When these facts came before the Justice, in the characteristic manner of the early courts he decreed, "This case is continued for

three months and the plaintiff herein is to furnish his coon dog to the defendant during that time." The record shows that at the expiration of the time of continuance that one hundred skins had been furnished. The case was then dismissed without costs and in order that good feeling might prevail, Watt Bryant, constable for the court, procured a quart of whiskey from one of the trading boats that was lying nearby in the river. From it a drink was had by the parties all around; whereupon both Audubon and the defendant to the law suit acknowledged their satisfaction.

III.

The first reference to the American Avocet in this naturalist's works came from an experience of Audubon two miles south of Vincennes, Indiana, at a small pond, in June, 1814. As he traveled on horseback from Henderson, Kentucky, to Vincennes, Indiana, he noticed a number of birds alighting in the pond. He immediately left his horse and crawled towards the water. He found the swamp but a few inches deep but with mud thereunder fully knee deep. As he approached through the tall grasses four birds assailed him, constantly giving harsh cries. They remained upon the wing but dived at him repeatedly. He soon recognized them as Avocets. It was new to him to find them breeding so far from the ocean, so he painstakingly sought out three nests which contained eggs. He then, from a hidden position in the shelter of the grasses, watched the behavior of the birds. He found that they were experts at catching insects; that they ran with partly extended wings; that they waded through the water hunting food often with the whole head and part of the long neck submerged, as he had seen the spoon-bill and the Red-breasted Snipe doing in other parts of the country.

Audubon returned early the next morning from Vincennes for further study and was able to advance on hands and knees to within three feet of a sitting Avocet. He exclaimed as he watched the bird from such a close range: "Lovely bird! How innocent, how unsuspecting, and yet how near their enemy, albeit he be an admirer of thy race." Within a moment after this thought came to his mind, he noted that the bird left the nest and used the well known broken-wing trick, appearing to have been wounded as it flopped along the ground in an effort to distract Audubon's attention from its nest and eggs.

During that morning, Audubon collected five of these birds, three females and two males, which served as specimens from which he

drew his painting of them in the elephant folio called "Birds of America".

IV.

Upon a three weeks' visit by Constantine Rafinesque with Audubon at Henderson, Kentucky, in the summer of 1818, together these scientists, who were only a year apart in age, crossed the Ohio River at Henderson into Indiana in order that Audubon might show Rafinesque, on a day's journey, the gigantic trees of our western forests and a cane-brake more than two miles wide, as well as the associated botanical forms. In Indiana they encountered a bear and became drenched in a heavy thunder shower. The area was not new to Audubon as he says he was "well acquainted with it".

Rafinesque made a collection of fungi, lichens, and mosses on this side of the Ohio River but not being familiar with the efforts of cane-brake travel found it strenuous and discarded the botanical specimens one by one in order to go forward lighter. When these men of science reached the Ohio again, late in the day, Audubon sounded his horn whereupon a boat came across from Kentucky for them, which allayed Rafinesque's expressed fear that they should never find their way out of the brake alive.

V.

It is recorded by the eminent authority on Indiana history, George B. Lockwood, that Audubon, while residing and maintaining a store at Henderson, Kentucky, was a visitor at New Harmony, Indiana, calling upon the scientific men there assembled. At that time the Robert Owen Communistic experiment was being tried at New Harmony with the aid of such well known scientists on the Staff of Educators as Thomas Say, now called the "Father of American Zoology", Gerard Troost, Charles A. Lesueur, William Maclure, popularly called today the "Father of American Geology", Lucy Sistaire Say, and Josiah Warren. New Harmony is about forty miles northwest from the town of Henderson.

Another statement concerning Audubon in New Harmony appears in *Harper's Magazine* and is by Mrs. Phillip Speed, late of Louisville, Kentucky, daughter of George Keats, brother of the English poet, John Keats. Mrs. Speed states that her father told her when she was a young girl that he and Audubon resided for a time at New Harmony while the Rappites lived there.

The Rapps occupied the town from 1815 to 1825. George Keats came from England in 1818. Audubon lived in Henderson from 1810 to 1818, during which time he visited at New Harmony. Next he resided in Louisville and then in Cincinnati till October 12, 1820. After that for a time he resided in New Orleans, Louisiana, and Natchez, Mississippi. Thereafter he is not known to have lived in Indiana or Kentucky. I find no corroborative evidence of Mrs. Speed's statement. I believe the statement of Mrs. Speed is an error, as the residence of Audubon is accounted for elsewhere.

VI.

On October 12, 1820, after Audubon had finished his work as taxidermist at the Cincinnati Museum, he left there with two flat boats carrying Capt. Samuel Cummings, Jacob Aumack, Joseph Mason, and others, executing a plan made to explore the Ohio, Mississippi, Red, and Arkansas Rivers and adjacent woodlands in order to study birds and plants and to make drawings of them for his great work.

I find an interesting entry in the journal of Audubon made on board his scow, October 17, 1820, as he scanned the northern or Indiana shore of the Ohio. The item is, "The Turkeys extremely plenty and Crossing the River hourly from the north side. Great number destroyed falling in the Stream for want of strength."

Audubon's fleet of boats made its first recorded stop on the Indiana shore a few hundred yards below Evansville on November 1. While Aumack, acting captain of one of the boats, sought to collect a debt due him there, and Cummings with young Mason went on ahead down the Ohio to Henderson in a skiff. Audubon made note of large flocks of Snow Geese, only one of which birds was, he says, in perfect plumage.

When afloat again and down three miles from Evansville, Audubon observed three birds he considered Brown Pelicans. He and the party landed below them while they were perched in a red maple tree. The artist let it be known that he desired to have one of them. Mr. Aumack stalked them and fired at two that were close together. Neither fell, which Audubon regretted exceedingly. The adventurers spent the night at that place.

The next night, reports Audubon, because of quite a gale they put ashore on the Indiana side opposite Henderson, his former home. While here the painter made what he is pleased to call "a rough drawing" of the place. At this camp Audubon says they saw sea gulls, *Larus argentatus*.

Continuing the journey down the Ohio, they came to Diamond Island, wild and beautiful, the next day, November 3. Audubon and his party landed upon it and found a fine Snow Goose, northern divers, and a few Sandhill Cranes. Our ornithologist spent the whole next day hunting on this immense island with the result that he saw a great many turkeys and "dears", blue cranes, "wood groos", a winter wren, and turkey buzzards. The latter were engaged in feeding on a dead hog.

When Slim Island, a mile below Mt. Vernon, was reached November 5, Capt. Cummings went ashore there but found nothing of interest to him. Of the stretch of the Ohio opposite this island, Audubon reports "this part of the river rather difficult". It has shifted its banks or bottom since that time for the main channel which is between the island and Indiana now presents a magnificent, sweeping bend beside and below the island where I have lately watched flotillas of a half dozen heavily laden barges lashed into a whole, while being pushed by a stern-wheel packet, negotiate the course with the utmost ease.

On down stream, after he left this island, Audubon had a red letter day for he saw geese, loons, red-breasted thrushes (robins), many sparrows, parokeets, a winter hawk, and a woodcock.

When these two barges, proceeding lashed together side by side most of the journey while in the Ohio, arrived at a place nine miles above the mouth of the Wabash River, though the temperature that November 6th was 28° and the weather very disagreeable, Audubon disembarked and with gun on shoulder tramped in Indiana to the confluence of these two streams. His trip was over the open weedy spaces, through forests of pecan, hickory, maple, and tupelo, and vast cane-brakes, all of which characterized the region. While he doubtless enjoyed this trek along shore he says he found nothing new of bird kind which he desired to collect for painting. His crafts, after he was aboard again, soon encountered a gale and were blown to the Illinois shore a mile down.

I have lately journeyed afoot over some of the territory embraced in the nine mile trek along Indiana's southern border, now in Posey County in the southwest corner of the state. There are no brakes of reed or fishing-pole cane today. All one sees is a patch here and there of slim six or eight foot tall stalks. A half dozen forest trees in clumps are to be encountered at intervals along shore, the only reminders of river-bordering woodlands that in days agone were so dense as to be almost impenetrable. They have largely gone to fur-

nish fuel to wood-burning packets, common soon after Audubon's time. Cypress trees then as now, likely grew only in the nearby bayous of both rivers as Audubon makes no mention of encountering any of them along the river border.

Audubon's nine miles afoot constitute the last trip on which he is known to have visited Indiana.

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INDIANAPOLIS, IND.

PERCIVAL BROOKS COFFIN

BY R. M. STRONG AND W. C. ALLEE

Percival Brooks Coffin was born in the small city of Richmond, Indiana, in 1865, the youngest child of a Quaker family that had for two generations strongly influenced the religious, philanthropic, and financial development of its community; he died nearby Richmond in his modest summer home, "The Brooks", on October 7, 1935, after a brief illness. His parents did not send their youngest and somewhat delicate son to public school, but taught him or had him taught at home. One of his closest friends writes: "It always seemed a bit pathetic to think of this active mischief-loving little chap not allowed to play with boys away from home, not allowed to go to public school, always tutored, sitting on the floor forming armies with spools while his parents read aloud Parkman's histories." Although his father, Charles F. Coffin, among his many other notable activities, was one of the founders of Earlham College, the boy was not sent there.

As happens to good minds denied formal school and college training, he felt a vivid sense of his loss which he was constantly alert to repair by his own efforts. In this he was so successful that in full maturity he had become one of the best and most truly educated of men.

Percival Brooks Coffin, 1865-1935.

The three external determining factors in Percival Coffin's life were his association with his parents and their wide range of philanthropic interests, such as prison reform, the rights of Indians and the improvement of hospitals for mental diseases; the failure of his father's bank when Percival was still a young man; and his marriage to Lucy V. Baxter, daughter of an outstanding Quaker family of Richmond, and an enthusiastic naturalist. There followed highly formative years (1894-96) at Santa Fe, New Mexico, and the beginning of Mr. Coffin's development as a naturalist in his own right. The young couple went on frequent trips into the interesting surrounding country and made acquaintance with such birds as the Woodhouse's and Piñon Jays, the Townsend's Solitaire, and other Rocky Mountain species.

Characteristically strong and lasting friendships were founded in this period. After that he moved to Chicago which was his residence for the remainder of his life. Percival Coffin's ornithological activities, aside from excursions into the country as a lover of birds and of nature in general, were largely associated with the Chicago Ornithological Society, the Wilson Ornithological Club, and the Inland Bird-Banding Association, all of which involve Lucy V. B. Coffin, whose interest in ornithology preceded his. The senior author met Mrs. Coffin as an alert and enthusiastic student in a lecture course on birds open to persons not regularly registered as students in the University of Chicago, some time before 1912.

This led to a friendship with both members of the family and they were among the first persons considered as possible members of the Chicago Ornithological Society, which was founded in 1912. They accepted the invitation and became charter members. Until ill health during the past two years took them away from Chicago, they were leading supporters of the society. They attended meetings regularly and did much more than their share of the work involved in making it a success. Both served frequently on committees and as officers of the society and they often contributed to the program. Mr. Coffin was president in 1921 and 1922; he was on the Ridgway Memorial Fund Committee in 1928; in 1920 he conferred with the Governor and both Senators of Indiana about the possibility of establishing a state park in the Indiana Dunes—a splendid project which was later accomplished.

Percival Coffin was treasurer of the Wilson Ornithological Club during the years 1914-16, inclusive. Up to that time the organization had been small and its future uncertain. The WILSON BULLETIN had been kept alive largely through the devotion and perseverance of

Professor Lynds Jones of Oberlin College. Mr. Coffin applied his unusual business ability and experience to the financial problems of the club and he had much to do with its expansion and reorganization. His sane and comprehending advice was greatly appreciated by the other officers.

He was one of the organizers of the Inland Bird-Banding Association, calling the first meeting to order and serving on the first nominating committee.

About 1918 they purchased a farm near Richmond, Indiana, which they named "the Brooks". This became a bird and plant sanctuary where they made systematic studies of the habits of birds and experiments in allowing a portion of the land to return to its natural state so far as possible. Here they spent their vacations, sometimes half of the year.

On coming to Chicago, Mr. Coffin first entered and later continued his father's office as investment banker, and relieved himself from business cares by work on civic committees of the City Club; by continuing his music; and by active interest in the Society of Friends, in which the now well-known work of the American Friends Service Committee early caught his attention and devotion. During the long, slow progress of the depression the attention of the Coffins turned more and more toward their naturalistic interests, even after the severe illness of Mrs. Coffin stopped active field observation.

An interesting result may be quoted in full from the November, 1935, issue of Biological Abstracts (9/9):

"COFFIN, PERCIVAL BROOKS. The eyes of birds. *Indiana Audubon Soc. Year Book*. 1933: 62-65. A general critical account, with conclusions, relating to the morphology and visual properties of birds' eyes."

Among ornithologists, bankers, college professors, farmers, and particularly among the many young people the Coffins befriended, of whom some of us, including the junior author are no longer young, Percival Brooks Coffin is remembered primarily for his friendliness, his whimsicality, his originality, and his clear-eyed, wholesome philosophy of life.

OBSERVATIONS ON THE FLORIDA BLUE JAY

BY DONALD J. NICHOLSON

My experiences with habits of Florida Blue Jays (*Cyanocitta cristata florincola*) has extended over a period of more than thirty years and I felt that the subject might be interesting to some.

Range in Florida

This subspecies is found throughout the entire State, but the center of their abundance is central Florida, in Orange, Lake, and Volusia Counties. They are especially numerous in this section on account of the large acorn-bearing oaks. The center of their abundance appears to be in Orlando and Winter Park. These cities are literally alive with them.

Jays are most commonly found where large water oaks and live oaks prevail, and elsewhere are far less numerous. They are to be found on all high ground, but not in marshes except in rare cases. Cypress swamps, pine timber, little hammocks in prairie country, sandy wastes with scrubby oaks, are all frequented. Birds found in cities and villages greatly outnumber those which inhabit sparsely populated areas, and are even more noticeably rare in wild parts of Florida. They seem to have a preference for human society, and are not wild in the cities. The birds of the unpopulated sections are entirely different, becoming most secretive and shy, avoiding man.

Should Mr. W. E. Clyde Todd's new subspecies of the Blue Jay be accepted by the A. O. U. Committee, it will leave in doubt the exact range of the Florida Blue Jay in southern Florida.* Mr. Todd's specimens were collected near Cocoanut Grove, Dade County, Florida.

As some few individuals in this section (Orlando) are noticeably darker than others during the breeding season, Todd's specimens may prove to be only a case of individual variation, occasionally found.

General Habits

The bird is very bold and dashing, being able to cope with most any bird of its own size, and frequent encounters take place among such birds as mockingbirds, woodpeckers of several species, Florida grackles, cardinals, brown thrashers, and others. These conflicts are usually about food supply, or following territory intrusions.

Their bitterest enemies seem to be any species of owl, and when once discovered, these noisy fellows make life miserable for a luckless Screech Owl found dozing on some limb. I can invariably tell when

*Editor's Note. This paper was submitted before the Fourth Edition of the A. O. U. Check-List appeared in 1931.

a Screech Owl is in the neighborhood by the deafening din caused by all the jays in the vicinity assembling and voicing their protest. Excitedly jumping from limb to limb or flying here and there, they dive and peck at the unfortunate owl until he is so dazed and harrassed that he hurriedly seeks refuge and after him goes the entire flock screaming as they follow. This is often repeated until the object of their wrath moves out of their range and finds a safe hiding place. Crows are probably as badly hated, and are promptly put to flight. Small hawks or even larger ones are likewise bombarded. Snakes, squirrels, cats, and dogs come in for their full share of attention and for long periods the jays will clamor loudly, pecking and darting at such enemies. Oölogists are classed as first-rate nuisances and are treated as pests in case one molests their nests; and woe to the man or boy who ascends bare-headed, be his intentions mere curiosity or "egging", for most surely he will receive a smart jab on the top of the head, with a couple more thrown in for good measure. However, this depends on individual pairs of birds; some will quietly fly away, perhaps giving a few outcries; but in the majority of cases both parents, augmented by many others, will come shrieking and attempt to intimidate the intruder.

It is a decidedly embarrassing moment to a sensitive oölogist, to be found robbing a jay's nest, on some main street in town, by a benevolent old man, attracted to the scene by these vociferous defenders, and he will have to do some tall explaining at times, especially if he is caught on the old man's property. I well remember an amusing incident that occurred years ago. I had spotted a nest in an oak, under which there was a public bench, in a fashionable section of town, and to obtain this set of eggs I was compelled to climb after nightfall. I had ascended and was in a precarious position out on a slender limb, when along came a spooning couple and parked on the bench below. Fearing detection, and probable accusation of eavesdropping, I ceased all movements, hardly daring to breathe. The outcome was that this pair remained until I was all but exhausted, and a very sleepy young man, and vowing to never again resort to such means of collecting. The eggs are in my collection to remind me of this now amusing predicament.

Just a little after day-break the jays begin their day, and practically every morning they give a really beautiful musical concert, which is impossible to describe on paper. The manner in which it is given is as follows: One bird will utter a mellow two-syllabled note which to me sounds like, "*toooo-el, toooo-el*"; the o's (uttered like u)

are repeated many times and by many birds, creating a pleasing effect. This is kept up for fifteen or twenty minutes and then is heard no more. I have noticed this peculiar program for a year and it occurs throughout the entire year. Whether this is merely a local habit, or not, I cannot say.

They have a very large vocabulary, and quite varied tones. Nearly every one is familiar with their loud *day, day, day* notes, but the bird also has a low, sweet, musical, mimicking twitter, which is delivered while perching, and is not accompanied by the bobbing motion of the body, as when uttering their calls. The most uncommon and peculiar vocal sound is a rattling of the throat producing a sound like marbles being shuffled in a bag, and is always done with an energetic bobbing of the head and body. This is usually a sign of great agitation, and is often followed by vicious pecking and pounding on the perch. The bird is angry and wrecking its vengence on something to display its feelings.

A series of low, soft notes uttered in rapid succession, sounding like, *tit-tit-tit-tit-tit-tit-tit-tit*, are invariably given while the birds are both at the nest during building, or when the male returns to feed the female on the nest, which he does frequently. Countless other indescribable notes are given in pitches of different degrees. These jays are quite expert at imitating the call notes of the Florida Red-shouldered Hawks, and they are thus commonly heard in any part of their range. The deception is difficult to detect. It is the only mimicry practiced by this bird.

Jays are restless, energetic birds, moving from place to place among the trees, and just as much at home on the ground, where they hop about in search of food or nesting material. They are more or less sociable, and go about in troups, but are often found singly.

The flight of these birds is strong and is generally in a straight, direct course, with medium wing-beats. But another form of flight is a slow-moving undulating sweep, given with an occasional flap, and only used in going short distances. This slow flight is more often seen when the birds give their musical "*Tooo-del*" notes.

They are much attached to certain given ranges and remain for years near the same spot.

Nesting Habits

The Florida Blue Jay is a most abundant breeder at Orlando, and I doubt if there are any other cities in the State where it can be found in such large numbers, due to ideal food conditions and nesting places. In any part of its range it is found to breed much more commonly in

densely populated towns and cities in preference to uninhabited areas. Whether this is due to a plentiful food supply or for protection against natural enemies not found in inhabited areas, or a combination of both I do not know, but I am inclined to lean towards this theory. It would not be an exaggeration to give an estimate of 15,000 jays within a radius of six square miles in this district (Orlando and Winter Park).

The favorite nesting-tree is the oak, and on many streets along the sidewalk I could count from three to six nests within one city block, which will give some idea of their numbers. At this present writing (April 27) I counted three nests within a circle of 150 feet, and as close as forty feet one way and seventy-five feet the other way from the center nest, and all occupied. A huge oak over 100 feet high with a spread of 200 feet is as readily used as a small tree. Such trees as pine, oak, orange, grapefruit, china-berry, bamboo, hickory, and a few others are also used.

The most cunningly concealed nests are placed in moss-draped trees, and the hardest of all to detect are those in tall pines. As a general rule no special pains are exerted to conceal their nests, at least not in cities; but a country nest is indeed difficult to see and the birds are very wild. Nests are placed anywhere from seven feet above the ground to seventy feet, but on the average a nest is from eighteen to twenty-five feet high. In large trees the nests are placed on small out-cropping branches of some immense limb, or occasionally saddled in a fork of a horizontal branch among a few sprouts. Upright or horizontal branches are equally used, and sometimes the extremity of a long slender branch is used. Most generally the interior of trees is chosen, thus saving the nest from destructive swaying branches.

A foundation of course twigs is always used, and frequently mud is employed to cement the lining to remain intact. Sticks, Spanish moss, paper, twine, rags, pieces of crockery, wire metal, are all more or less used, and the lining is composed of either black or yellowish-brown oak rootlets, or fine orange roots. Grass or weeds are seldom used, strange to say. A nice, neat hollow is made. Some nests are very slim, while others are quite bulky. The time required to build a nest varies from six days to a month, but this is in unusual cases. Horse-hair formerly was used frequently along with the rootlets in lining, but this is a scarce article now.

During the later part of February jays begin building their nests and by the middle of March many have completed their sets of from

two to five eggs. The most common number is four, but three eggs are quite common and full sets of two eggs are not at all unusual. A set of five eggs is very rare. Williams, at Tallahassee years ago, recorded one set of six eggs but out of hundreds of nests examined I have seen but five eggs as the extreme.

I have found nests containing eggs as early as late February in very warm early springs, but eggs are rarely deposited until March 10; and from then on until August. Two nests found by my brother, Wray H. Nicholson, and myself, contained eggs during the first week in September. This gives this bird a breeding period of eight months, but, strictly speaking, it nests regularly for six months.

Again during May a second set is laid, which is comprised of about the same number of eggs as the first set, and again in July or August a third set is deposited. This prolific nature accounts for the large number of these birds, and as they have few enemies (such as gray squirrels, an occasional prowling crow, and even their own species) their chances are excellent for rearing many young. I once caught a squirrel robbing a jay's nest. The jays themselves have a habit of robbing a neighboring jay's nest, and oftentimes I have found holes pecked in eggs.

As a usual thing a jay will not abandon the nest if inspected, whether the set is complete or not, but on numerous examinations I have returned only to find the eggs pecked and destroyed or entirely missing. This I am not sure was caused by the birds themselves (parents), but am inclined to believe they had at times something to do with this destruction.

These birds will resort to a certain tree or group of trees each year to nest and you can be sure of finding a nest at the proper time. If a nest is taken she will within a few days build another a short distance away, or in the next tree a few yards from the first site, or even in the original tree in another limb. I have known them to rebuild and lay another complete set of four eggs in twelve days. I once took a set of eggs, and passing several weeks later found that they had rebuilt in the identical crotch where the first nest had been. In another case I took a set and the bird again built her nest on the same limb within four feet of the first nest, which was still intact. On March 17, 1929, I collected all of four eggs. On April 29 a third nest was found fifty feet away, with three eggs, one a runt about the size of an English Sparrow egg. These eggs were all identical in shape, ground-color, type of markings, in all three sets, except the runt which was very dark; it was without a yolk.

A most unusual occurrence is the laying of a second set in the same nest when robbed. My brother Wray once collected a set of three fresh eggs from a nest and some weeks later happened to find a bird sitting on the same nest. Upon investigation he found her on five pipped eggs. I found a jay's nest in a grapefruit tree in April, 1929, and in less than two weeks she was sitting upon another set in the same nest.

The birds sit quite closely upon their nests and seldom flush until you ascend within several feet of them. Then they either hop off into a limb within several feet and scold, or fly quite a distance screaming as they go; or more rarely, leave silently and remain away while you are at the nest. The parents usually keep up a fierce clamoring, and are often joined by other jays adding to the turmoil.

Some sitting birds are quite tame and can be handled and placed back upon the nest, remaining as if nothing happened. Such behavior has been observed by my brother, Wray, the late William Leon Dawson, and myself. This is of course, unusual. Last year I found a jay sitting on her nest and, reaching over carefully, lightly touched her bill. She never moved, but blinked her eyes. Very slowly I moved my hand and stroked her head, and along the back; she, then, became alarmed and flew away. The next day I repeated the operations, lifted her off the eggs, and placed her gently back on the nest; she remained perfectly quiet, seeming not to mind in the least. No scolding or pecking was done, nor did her mate utter any outcry. Several "close-ups" were snapped within two feet of her, taken by William Leon Dawson, just seven weeks prior to his dath. This was some of the last photographing he did in Florida.

The eggs of the Florida Blue Jay, vary more, I presume, in pattern of markings, shade of ground-colors, and the inconstancy in sizes, than any other of the North American Corvidae. Few other species on the A. O. U. list can compare with it for variation in the eggs. The ground-color can be dark green, light green, pale blue, putty-color, salmon-color, gray, all shades of brown, and even dirty white. The markings are either brown, gray, lilac, or purple, with occasional black shell markings. Some eggs are finely speckled, others sprinkled with large dots, some with heavy capped ends, and a few with lines finely drawn connecting the markings. The usual type of marking is a speckling over the entire surface, with less at small end and confluent at large end. However, many eggs are almost devoid of markings on the lower half of egg. Others are so finely sprinkled over the entire egg that it obscures the ground-color. The shape of mark-

ings may be round, irregular, streaked, or pin-point dots, but I have never seen large blotches or splashes. Some eggs are identical with the Crow, and look like miniature eggs of that species.

The most common shape of the egg is quite pointed, few are quite blunt and some are very nearly equal-ended. There is a great discrepancy in size and many eggs are three times as large as others, while others quite small although fertile. But as a general thing the eggs in one set average alike in size, also in type of color and markings. I have never seen an unmarked egg. The shell is smooth and hard, with or without gloss, and much tougher than that of a Crow in comparison. Often little pimples are found on their eggs. To display a few sets in one drawer to an oölogist, and then have another drawer of different patterns shown later would completely throw him off his guard, as to the identity.

Food and the Young

Jays generally speaking will eat almost anything. They are fond of kitchen scraps, meats and bread, fruits of many kinds, bugs, insects, beetles, eggs, worms, corn, and all sorts of grain, green food, and have been accused of devouring young birds, which I have never seen them do. The cannibalistic habits must be infrequent or else I would have noted it, and neighboring small birds would be more antagonistic towards this saucy bird. I have never seen the nests of other birds with punctured eggs, or few deserted nests, where jays were numerous, which to my mind is evidence of innocence. I forgot to mention acorns which is their favorite food, and any time of the year they drop to the ground, pick up a fallen nut and perching with it firmly held by their strong toes, hammer with heavy blows until opened. They fly onto an ear of corn and pick away until the objective is secured. They hang upside down chickadee-fashion in trees, on moss clumps, or on ends of branches, searching for insects. I have seen them dart out from a tree and pursue, flycatcher-like, an insect, chasing it for long distances. Farmers do not class this bird as destructive, but as a beneficial species.

As mentioned before the female is fed upon the nest, but often also while off the nest. She entreats in the teasing manner of the young, and with quivering out-spread wings, using the *exact* notes of the hungry young, until the male gives her food. This voice positively can not be told from that of the young. I once saw a female feed a young one of the first brood, and a minute later settle down upon her second set of eggs, on the same limb upon which she fed

the young bird, which was apparently full grown. The young follow the parents for weeks begging for food, and are fed.

When first hatched the nestlings are perfectly naked, hideous-looking objects, with their eyes closed. They leave the nest in from fifteen to eighteen days, at which time the tails are quite short, and the feathers not fully developed on any part of the body or wings. Their power of flight is not by any means strong when they first leave the nest, and only short spaces can be covered. Many a young bird at this time of the year falls an easy prey to cats and various snakes. Many meet tragic deaths. A stray cat or dog is a sure target for jays in the neighborhood of a nest, and spirited dives and dashes are made, even sharp thrusts are given the animals, the birds all the while yelling and screaming their loudest.

In three weeks to a month, it is difficult to distinguish the young from the adults, but the face and throat is a smoky, dark color, instead of the rich black of the adult, and the bill is horn-colored, instead of black as in the parents; otherwise the plumage is apparently the same to all outward appearances. By the following spring no difference is seen. Even by fall I can not discern a particle of difference. A fledgling when caught, if caught by anything, emits terrified screeches as if in mortal agony, bringing the parents to its defense at once.

In preparing this article, I forgot to mention, under the caption of "Nesting", a few other facts worthy of note. The approach to the nest may be direct, but more often the bird flies to another part of the tree and gradually works its way to the nest. Both birds assist in nest-building, incubating, and rearing the young. There is practically very little mortality, as the young are quite hardy. Infertility in eggs is infrequent and a high percentage are hatched. I am ashamed to admit that I do not know the exact time required for incubation, but think seventeen days is about right.

ORLANDO, FLA.

NESTING OF THE PRAIRIE FALCON IN MONTANA

BY V. L. MARSH

Early Sunday morning, May 13, 1934, Ellsworth D. Lumley, Wm. Reavley, Jr., and I left Great Falls to visit the nest of a pair of Prairie Falcons (*Falco mexicanus*) that had been reported nesting a short distance from the Sun River Park road about one mile from the park and about a quarter of a mile south of the road.

FIG. 5. General environs of the pair of Prairie Falcons. Photographed by V. L. Marsh, July 4, 1934.

FIG. 6. The Prairie Falcon's nesting habitat. Nests of Brewer's Blackbird, Yellow Warbler, and the Western Lark Sparrow were found in the same area. Catbirds and Arctic Towhees could always be flushed from the bushes in the center of the scene.

FIG. 7. Closer view of the rock cliffs on which the Prairie Falcons built their nest. Rock Wrens also nested within this area.

FIG. 8. The Prairie Falcon's nest is in the vertical crevice shown in the lower right hand corner of the picture. Cliff Swallow nests may be seen above.

Arriving at the desired destination, we stepped from the car and scanned the sides of the cliffs and hill to the south with binoculars, but no evidence of a Prairie Falcon could be found. Having brought along some rope, a couple of flashlight bulbs, camera, etc., we assembled our equipment and proceeded up the steep hill to the south. A walk of a quarter of a mile brought us into a deep narrow gorge walled in on three sides by more or less irregular cliffs about fifty feet high. As we entered the mouth of the gulch a shrill scream pierced the air and at the same time a grey streak shot out over the gorge toward us. Presently the second falcon appeared on the scene and from their actions it was plain to be seen that we were treading on forbidden territory. After a few minutes the bluster of protest died down and one of the parent birds sailed up and out over the valley to the north until we lost sight of it in the distance. The other bird perched on the southeast side of the gorge about one hundred yards away and directly opposite the crevice in the west wall of the cliff where the nest was located.

Being the camera man it was up to me to scale the cliff and see what could be done about photographing the nest of young. Lumley and I climbed to a ledge about twelve or fifteen feet below the crevice containing the nest. I scrambled on up and managed to get to the mouth of the crevice. Lumley passed the camera, film holders, and flashlight equipment up from below and in a few minutes all was ready for the picture. Two flashlight pictures were taken. One of them is Fig. 1. When I first looked into the crevice I could see nothing, but in a minute or so my eyes had become accustomed to the darkness and the nest could be easily seen about five feet back from the opening. The nest contained five young Prairie Falcons that I judged to be about two weeks old. At the opening the crevice was about two feet high and sixteen inches wide. It ran back for fifteen or twenty feet and turned out of sight to the left. At the point where it turned out of sight the crevice had narrowed down to six inches wide and twelve inches high. The floor of the crevice was comparatively level though there was a hollow comprising the nest bowl in which the young falcons were closely huddled.

The floor of the crevice was strewn with bones. This same nesting sight has probably been used by Prairie Falcons for many years as was evidenced by the decayed bones and excrement mixture composing most of the covering of the floor of the crevice. Some grass and a few sticks had been brought in for nesting material but there was not much evidence of a well shaped nest. Probably a few twigs

and some grass stems are used to reline the nest hollow each year, but when the young are running about they strew it from one end of the crevice to the other.

An external parasite was working on the little fellows and they were kept busy most of the time scratching and picking themselves much like a dog that is badly infested with fleas.

This was too good an opportunity to pass up so I placed a No. 6 band on each of the five young falcons.* None of them objected to being banded, but I would not advise anyone to try banding birds of this species when they are much older than these were unless an assistant is at hand.

The parent bird that had been perched across the canyon kept its perch until about the time I reached the mouth of the crevice and at that time it flew very close (probably not more than twenty feet) screaming at the top of its voice. After a few of these dashes it disappeared and we did not see it again until about the time we were ready to leave which was probably about fifteen minutes later.

The nest was visited the second and last time on May 27. The young were walking about in the crevice and were constantly screaming much like their parents as I looked into the mouth of the crevice. Two of the young came running to meet me flapping their wings and uttering a peculiar, harsh caw much like that of a farm-yard hen when she sings to herself. Although the young were still covered with white down the black primary feathers had begun to show on their wings and they would probably leave the nest in about two or three weeks.

During the last visit to the nest the two adult birds kept up a constant screaming and darting here and there about the edge of the cliff. Although they made no attempt to strike at me I did not stay long for, after an experience I once had with a pair of Great Horned Owls nesting on a cliff much like this one, I was in no mood to have a pair of talons sunk into my back when twenty feet up on the side of a rock cliff.

The Prairie Falcon is not a common resident of this district though I see a few birds each year at scattered points over the State.

GREAT FALLS, MONT.

*Prairie Falcon B665825 was killed twenty miles west of Polson, Mont., on October 5, 1934.

THE CONCENTRATION OF CATBIRDS AT THE CLOSE OF THE NESTING SEASON

BY GEOFFREY GILL

Mention is made by the writer in the October, 1930, issue of *Bird-Banding*, of the probability suggested by John T. Nichols that Catbirds (*Dumetella carolinensis*), tend to concentrate in certain favorable tracts at the close of the nesting season. Such tracts being understood to contain a density of cover, water, and food, such as insects and wild berries of many kinds.

During the past five years, in Huntington, Long Island, New York, this concentration of individuals from outside my banding station area has apparently centered in an extensive planting of Scotch pine, now about fifteen years old, situated on the northern boundary of my station. Wild blackberry canes and other small berry-bearing growth have overgrown this planting to such an extent as to make it almost inaccessible in places, while a constant supply of water is assured by my traps and several bird-baths of my neighbors.

This concentration near my station usually takes place in August but occasionally continues into September when weather conditions are arid. The following table of Catbird captures at the station supports this view:

Year		May	June	July	Aug.	Sept.	Oct.	Total
1931	Adult	19	4	4	6	2	0	35
	Immature	0	0	3	26	8	0	37
1932	Adult	31	8	1	5	12	7	64
	Immature	0	0	14	33	13	1	61
1933	Adult	11	1	7	13	5	2	39
	Immature	0	8	7	16	1	1	33
1934	Adult	26	14	1	11	6	2	60
	Immature	0	1	6	43	1	0	51
1935	Adult	26	6	10	8	28	1	79
	Immature	0	23	23	49	9	0	104
Total	Individuals	113	65	76	210	85	13	563

It will be seen that a large percentage of each year's catch is made in August and that many new adults are taken at this time. In the seasons of 1932 and 1935, I believe the concentration periods extended into September. It will be noticed in the above table that more adults and immatures were taken in September of these years than is usual. The extension of this period in 1932, I believe, is due to weather conditions. James H. Scarr, United States Meteorologist, in his weather records for New York and vicinity, gives the average precipitation for August and September as 7.72 inches, while in the season of 1932, the rainfall during these two months amounted to only

4.28 inches. During the first fifteen days of September the maximum temperatures were considerable above normal; the second day of the month registered the highest temperature of the year.

Weather conditions in 1935 were similar. August, 1935, had less rainfall than the dry August of 1932. September, 1935, had more rainfall than is normal, but this was nearly all confined to four days early in the month, September 3 to 6, while temperatures for the two months were very close to normal.

A tabulation of the trap repeats of this usually trap-shy species for the five years further supports the concentration theory. Sixty-six per cent of the repeats were made in August and September and are as follows:

	May	June	July	Aug.	Sept.	Oct.	Grand Total
Repeats	20	22	26	77	55	7	201

Forty-five of the above September repeats were made in 1932 and 1935 which is more than five and one-half times greater than the total repeats made in this month for the other three years. The same number of water-baited traps have been in operation throughout the entire five years and in the same locations. As the majority of these traps are of the automatic type, the element of chance in the trapping of these birds is equal throughout the seasons. Unless there was a concentration, as suggested, it would seem that the records would be different.

While it is admitted that birds of the year greatly swell the totals of the new birds trapped in July and August, and also swell the number of repeats, immature birds being easier trapped than adults, young birds do not account for all of this concentration. Many new adults are trapped in August and seldom caught at other times.

With the thought in mind, that many of the immature birds appearing in my traps during the concentration period might be young from nearby nests, twenty-seven fledglings were banded in 1935, within 500 feet of my station to test out this theory. Only two of these fledglings repeated in my traps. Both repeated once in the first week of August. It is the belief of the writer, that the female and her brood wander away as a family group after leaving the nest. They appear to wander far enough to be outside of the area from which the concentration near my station is drawn and probably join some other concentration elsewhere. The male stays around his territory and if it is early in the season, he may be joined by another mate. However, old male birds, in which sex is known by colored banding, are a part of the influx of adults at the local concentration.

Possibly the theory of a concentration is best shown by the records of certain individuals at this station, many of them at least two or three years old, which are seldom taken during the nesting season, but appear in our traps in August. They are as follows:

Band No.	Date of Banding	Year	August	Repeats and Returns Other Months
B-165493	May 17, 1932	1932	9	May 18, June 15
		1933	....	July 28
		1934	3, 10, 11	.....
		1935		*July 20
B-165496	May 18, 1932	1932	....	.....
		1933	2	.....
		1934	1, 16	May 20, July 5
C-132219	June 16, 1932	1932	20	June 17, 18, July 13
		1933	6	May 13
		1934	17	May 17
C-132239	July 29, 1932	1932	29	.....
C-132262	Aug. 11, 1932	1932	....	.....
		1933	....	July 15
		1934	10	May 12
C-132270	Aug. 14, 1932	1932	....	.....
		1933	....	Sept. 18
		1934	7	.....
		1935	....	Sept. 22, Oct. 5
C-144214	Sept. 21, 1932	1932	....	.....
		1933	30	.....
C-144282	May 18, 1933	1933	10	.....
F-102408	July 27, 1933	1933	5	.....
		1934	22	.....
F-102482	May 12, 1934	1934	1, 18	.....
		1935	....	July 4

*Caught by neighbor's cat—released.

These ten Catbirds repeated the same year as banded, five times before August and seven times during August. During the following years they were in the traps four times during May, five times in July, twelve times in August, twice in September, and once in October.

It is believed that the above adults nested at some distance from the banding station and at the close of the nesting season they were attracted to the vicinity of the station by the favorable factors already mentioned.

In the case of C-132219, the nesting history of this bird is known for three years. In 1932, C-132219, a male, nested with his mate within ten feet of an automatic trap, hence the large number of repeats in that year. During 1933 and 1934, he nested 300 feet east of our traps and while he recorded his presence at the beginning of the nesting season, he did not repeat again until August during the last two years. It is thought that the case of C-132219 is typical of the majority of such adult males which are trapped each year in August.

Huntington, L. I., N. Y.

THE BIRD COLLECTION OF THE CARNEGIE MUSEUM*

BY RUTH TRIMBLE

Although the bird collection of the Carnegie Museum is not among the oldest of American collections, it has the distinction of being among the largest. Listing American collections according to their size we find Carnegie in fourth place, with approximately one hundred and ten thousand specimens, representing about one-fourth of the known species of birds in the world. No munificent gifts of large private collections have increased our store, and no spectacular million-dollar expeditions, such as have contributed to the history of our sister institutions, have come our way. It would seem that the bird department of Carnegie Museum, much after the fashion of its founder, whose name it bears, has lifted itself by its own boot-straps.

In November, 1895, Andrew Carnegie's gift to the City of Pittsburgh became a reality. On June 1, 1896, the first birds were received. They consisted of 185 mounted specimens, a gift to the Museum from the Academy of Science and Art of Pittsburgh. Naturally the first concern of the new museum was exhibition and the early collections acquired were mainly of local birds. A consistent attempt in the early years of the museum succeeded in assembling an appreciable array of birds from western Pennsylvania. No inconsiderable part of this was the collection of Mr. W. E. Clyde Todd, who was destined to become the curator of the Section of Ornithology. Also included was a part of the George B. Sennett Collection, and the birds collected by Mr. Samuel N. Rhoads for the Museum. These collections all contain many interesting birds which now form a large part of our exhibition series of the birds of western Pennsylvania. As the years passed, the series of Pennsylvania birds continued to develop, until now we have a very complete representation of the birds of our region. Areas which received particular attention were the region of Lake Erie, the only section of western Pennsylvania where water birds abound; Pymatuning Swamp, which ecologically offered a fertile field for investigation; and the mountains of the middle portion of the State. In 1904 Mr. Todd published in the *Annals of Carnegie Museum* a comprehensive survey of the birds of Erie and Presque Isle, and in 1928 in the same publication Dr. George M. Sutton brought out an interesting paper on the bird-life of Pymatuning Swamp. This paper was quite timely, due to the fact that much of

*Read at the Twentieth Meeting of the Wilson Ornithological Club in 1934, at Pittsburgh, Pa.

the swamp-land was to vanish before a State project calling for the flooding of the area in the construction of a storage dam. In the past few years Pymatuning Dam has gradually become a reality, which has spelled doom for many marsh-dwelling birds, but which at the same time has opened up new territory for water birds. Observations on these changes and much valuable information as to the occurrence and distribution of the three hundred-odd species of birds known to occur in our region will be recorded in a long contemplated work by Mr. Todd on "The Birds of Western Pennsylvania", soon to be published. The basis of this report is a collection of approximately 6,000 birds, taken within a period of fifty years, and supplemented by detailed notes by the author, as well as those of many other observers who have unselfishly placed their notes at his disposal.

Coincident with the effort to build up a series of local birds the Section of Ornithology began to enlarge its scope and cast about for ornithological "plums", so to speak. From the Baron van Schauburg in Holland were purchased 800 beautifully mounted European birds. These constitute at present a large portion of the Synoptic Series of Genera of Birds of the World in our Galleries. Two unique and historic collections acquired in the early days of the Museum were that of A. W. Anthony, consisting of 10,000 North American birds, and that of Sir Walter Buller, 200 specimens of the birds of New Zealand. The Anthony birds were taken in the western States, in Lower California, along the Pacific Coast, and on the Island of Guadalupe. From the latter island are good series of the Guadalupe Junco (*Junco insularis*) and the Guadalupe House Finch (*Carpodacus amplus*), both described by Anthony, and also representatives of the now extinct Townsend's Shearwater (*Puffinus auricularis*), the Guadalupe Caracara (*Polyborus lutosus*), and the Guadalupe Flicker (*Colaptes cafer rufipileus*). The Anthony collection includes nineteen types, and is particularly rich in seabirds.

The Buller collection which came to the Carnegie Museum is that upon which Sir Walter Buller based his *Supplement to the Birds of New Zealand*, published in 1905. History was to record the almost complete destruction of a unique avifauna by the ingress of civilization on these islands, and today many of the native birds exist only in museums, and even there are rare. A number of these extinct forms are included in the Buller collection, among them one of the famous Stephen's Island Wren (*Traversia lyalli*), of which only about a dozen specimens are known to exist, the extermination of this species having been perpetrated by the light-house keeper's cat within a few months of its discovery by the self-same cat.

Although these particular units are important historically, they are but isolated bits of the main general collection, which from its inception was particularly designed to build up a representation of the avifauna of the New World. Two regions were designated for exhaustive investigation. The first comprised the arctic and subarctic regions of North America with particular emphasis upon the Peninsula of Labrador; the second, the countries of northern South America and the adjoining states of Middle America.

Operations in the North Country were first begun in 1901, when Mr. Todd led an expedition to Newfoundland Labrador. No less than twelve expeditions to Labrador and the region of the James and Hudson Bays have been conducted under Museum auspices since that initial venture. At the time this project was inaugurated Labrador was from a naturalist's standpoint an unworked field, and the collection of birds that has subsequently been assembled by the Carnegie Museum is surpassed by no other. The various expeditions have encircled the Peninsula, working the coast, the coastal islands and rivers of Ungava, Ontario, and Quebec, north of the southern limit of James Bay. In spite of the inaccessibility of the region investigations were made during all seasons of the year. On one occasion Mr. O. J. Murie elected to spend the winter in the Great Whale River region of western Quebec with the result that a magnificent series of such little-known arctic and subarctic species as Holboell's Redpoll, Rock Ptarmigan, Snow Bunting, and Lapland Longspur were secured for Carnegie Museum. On another occasion the Museum accomplished a difficult traverse of the interior of the Labrador Peninsula from the Gulf of St. Lawrence to Ungava Bay, a region never previously visited by naturalists. And again Mr. Todd invaded the winter fastness of the Hudson Bay area by dog-team with the specific purpose of observing nesting birds and collecting the little-known eggs and young of arctic forms. Thus the Carnegie collection is unique in that it was made not only in a region the natural history of which remains unrecorded, but also because it covers an entire season, winter as well as summer. The series of ptarmigan showing the various stages of spring and fall molt are not to be duplicated elsewhere; there are exceptional series (adult and juvenile plumage) of the various species of Limicolae, which have become rare of late years; and the many specimens of geese and ducks from this area prove invaluable in settling problems of subspecies and their distribution. The results of this research are being prepared by Mr. Todd for publication.

In line with the studies in Labrador was an intensive survey of the bird-life of Southampton Island, in Hudson Bay, made by Dr. George M. Sutton, whose conclusions were recently published in the *Carnegie Museum Memoirs*, and whose excellently prepared specimens are now all a part of our collection. Later studies have also been made in Manitoba, Saskatchewan, and British Columbia. Much of this work in the North Country has been made possible through the generosity of Mr. John B. Semple, of Sewickley, a trustee of the Carnegie Museum. Although the Museum has never actually worked in Alaska, we have secured several small but important collections from this territory, as well as from Wrangel Island and eastern Siberia.

In addition to our series of birds from Pennsylvania and the nearby States of Maryland, Virginia, and the District of Columbia, we have acquired a worth-while collection from Florida, secured by Mr. Willis W. Worthington in the early 1900's, and latterly through the efforts of Mr. John B. Semple and Dr. Sutton. These two gentlemen have within recent years collected for the Museum in the Rio Grande Valley of Texas and in Oklahoma. Except for these few instances our work in the United States has been somewhat erratic, and the greater part of our birds from the western states are those acquired in the Anthony Collection.

More than half of our entire collection has come from South and Middle America. From the Bahama Islands of the West Indies we have a small but fairly representative series of land birds, which formed the basis of a paper on the ornithology of those islands, published by Mr. Todd in 1911. In 1912 and 1913 Mr. G. A. Link, Sr., then of the Museum staff, secured during a year's residence on the Isle of Pines a splendid collection of birds, concerning which Mr. Todd published in the *Annals of Carnegie Museum*, in 1916, an admirable monograph, which stands as the authority on the birds of that neotropical island.

British Honduras was early marked for attention, and our first material was received from Mr. Morton E. Peck in 1905. For several years Mr. Peck collected in this interesting locality, but we were unable financially to acquire all of his collections. Through the courtesy of other institutions which received a share of this material the opportunity of studying and listing the specimens was granted to Mr. Todd, who was contemplating the preparation of a paper on the birds of British Honduras. It was apparent that more field work was necessary, even after Mr. Ernest G. Holt in 1926 had added another fine series of birds to our store. Meanwhile the Museum of Zoology of

the University of Michigan has acquired some note-worthy birds from this region and Dr. Josselyn Van Tyne has agreed to collaborate with Mr. Todd in the preparation of the report. It is hoped that our plans for sending another expedition to British Honduras to finish up the work there will be a reality of the near future.

We have a reasonably complete representation of the birds of Costa Rica, a territory not so large as the peninsula of Florida, but supporting a wonderfully rich and varied avifauna. This collection was made by Mr. M. A. Carriker and was reported upon by him in our *Annals* in 1908.

Santa Marta, Colombia, came in for a share of attention in the very early days of our history. The initial collection from Santa Marta numbered about one thousand skins purchased from H. H. Smith in 1898. In 1911 Mr. Carriker began operations in the region. From that time until 1920 work was continued there practically without interruption, resulting in the assembling of 5,000 specimens of birds, more than 4,000 of which came ultimately to the Carnegie Museum. "The geographical position of Santa Marta, lying as it does right at the gateway, so to speak, from the plains of Venezuela into northern Colombia; its semi-insular character; the isolation of its mountains, and their different trend and greater height as compared with the neighboring Andean system, all combined to make the study of its bird-life a problem of exceptional interest." Mr. Carriker's collections were made at various elevations from sea-level savannas to snow-capped mountains and in all the various kinds of habitat represented. In collaboration with Mr. Todd a faunal report on the birds of Santa Marta was prepared and published in the *Annals* in 1922.

The success of the work done in Colombia made the opportunity to acquire additional collections from Venezuela, put up in Mr. Carriker's inimitable style, seem highly desirable in furthering our work in neotropical regions. Venezuela was chosen as the next field of endeavor because it was the most logical field to enter after Colombia and presented a chance to work out distributional problems raised in connection with the investigations in Colombia. To Mr. Carriker's collections were added those from Mr. S. M. Klages, who had a wide experience in collecting in South America, and those of Mr. Ernest G. Holt and Mr. Harold Clement, who were sent out by the Museum on a regularly organized expedition, which, sad to relate, came to an untimely end. The Venezuelan material at present comprises more than 12,000 specimens and represents diverse areas, including as it does material from the north coast, from the Lower Orinoco and Lower

Caura Valleys, the foothills and western slopes of the Venezuelan Andes, and the coast region of the Gulf of Maracaibo to the paramos of the Andes of Merida.

Supplementary to the Venezuelan material are fairly good collections from Trinidad and Curacao, secured by Mr. Carriker, and also a valuable collection from French Guiana, received from Mr. Klages. French Guiana is of peculiar scientific interest because it is the accepted type-locality of many species of South American birds originally described in the writings of French and Dutch naturalists. In addition to his work in Venezuela and French Guiana, Mr. Klages also collected in Brazil for the Carnegie Museum. This material, amounting to almost 15,000 specimens from the valleys of the Lower, Middle, and Upper Amazon, is the largest and most excellently prepared collection of those birds in existence. It is very rich in such families as the Antbirds, Ovenbirds, Woodhewers, etc., and many species are in series large enough to permit disposal of duplicates by exchange when the collection has been finally worked up.

As early as 1909 we received our first consignment of birds from Bolivia, collected by Mr. José Steinbach. Until the time of his death a few years ago Mr. Steinbach sent us material regularly, mainly from his headquarters near Santa Cruz de la Sierra, but also from the Andes to the north and west. In many ways this material is the most interesting received from South America, because Bolivia is relatively unknown ornithologically. It has been a difficult collection to study because of the scarcity of material for comparison, but already a number of new forms have been described.

No attempt has been made to prepare faunal accounts of the countries of South America just reviewed. In most cases additional field-work will be necessary for comprehensive surveys. However, in the course of critical and systematic studies of our collection family by family—a task which is at present a little more than half complete —this large assemblage of birds has proved amazingly fruitful. In actual numbers it exceeds 60,000 specimens and comprises 2,500 species and subspecies, or fully one-half the number at present known from the South American continent. Already more than 280 new forms have been described, and with such excellent material available important contributions to geographical distribution and the revision of certain families and genera were made possible. These papers have been published, mainly by Mr. Todd, in the *Annals of Carnegie Museum*, in the *Proceedings of the Biological Society of Washington*, and in the *Proceedings of the U. S. National Museum*.

Carnegie Museum has, as already stated, given greatest consideration to the building up of adequate series of New World birds. Our collection of the birds of the Old World is consequently most inadequate. It is limited to the more common European forms and to small collections from China, Japan, the Philippine Islands, New Guinea, Australia, and New Zealand, already mentioned, and a small but interesting lot of the fast vanishing avifauna of the Hawaiian Islands. Most of this material has been acquired by purchase or exchange, except for one short trip to Austria and Yugoslavia, made by Mr. Ludwig von Fuehrer under Museum auspices.

The continent of Africa is represented by collections from Algeria, Cameroun, Kenya Colony, Nyasaland, Southern Rhodesia, and Angola. The Cameroun birds were collected over a period of years, mainly by Mr. Jacob Reis, and comprise almost 4,000 specimens. Two expeditions to Africa were made possible by the interest of generous friends. In 1929-30 Mr. Rudyerd Boulton, then a member of our staff, collected in Nyasaland and Southern Rhodesia; and in 1930-31 he again went to Africa—this time to Angola, in Portuguese West Africa, accompanying Mr. Ralph Pulitzer of New York, who generously financed the expedition. Our collection from Angola, although not extensive, supplements admirably the material in the American Museum of Natural History, and together with it will form the basis of a report on the birds of Angola, which Mr. Boulton is preparing. A number of obvious new forms have already been described by Mr. Boulton in advance of his general paper.

That, somewhat sketchily, is an account of the scope of Carnegie's collection of birds and the purpose it has served. We trust that in the future it will serve as capably to advance the science of ornithology. The success of the work is attributed in part at least to the general excellence of our material and its careful, systematic arrangement. The standard of quality upon which Mr. Todd has insisted has sometimes proved a trial to collectors, but at the same time a delight to those who have utilized our material. We take justifiable pride in the fact that our collection is regarded as unexcelled in quality and arrangement.

Carnegie Museum,
Pittsburgh, Pa.

GENERAL NOTES

Conducted by M. H. Swenk

Another Three-egg Set of the Mourning Dove.—Having read with interest the letter of Archibald Johnson of Stewart, Nevada, in the September issue of the WILSON BULLETIN, I wish to add another to the list of three-egg sets of the Mourning Dove (*Zanaidura macroura carolinensis*). This nest was found May 29, 1935, when it contained but two eggs, but the next day a third egg had been added. A dove's nest built directly on the ground was also observed about the same time, which is also unusual in my experience.—JOHN B. LEWIS, *Amelia, Va.*

The Great-tailed Grackle in Arizona.—On May 28, 1935, the writer had under observation for half an hour three individuals of the Great-tailed Grackle (*Cassidix mexicanus*). The birds were seen in a marshy, wooded area adjacent to the Gila River not far from the city limits of Safford, Arizona, and were possibly breeding. So far as known to the writer, there is no published previous record of the occurrence of this species in Arizona. According to Florence Merriam Bailey (1928) the farthest west breeding record of this species is for near Las Cruces, New Mexico, and the farthest west occurrence is at Mimbres, New Mexico. Both stations are considerably to the east of Safford, Arizona. It is regretted that no opportunity further to observe these birds presented itself, and it is hoped that a specimen can be collected during the coming breeding season.—GALE MONSON, *Soil Conservation Service, Safford, Ariz.*

American Egrets at Ray Lake, Des Moines County, Iowa.—Mr. Allen A. Green, overseer of the Allen Green Refuge, a State wildfowl sanctuary in northeastern Des Moines County, Iowa, reported the arrival there on August 21, 1935, of a flock of some thirty-five American Egrets (*Casmerodius albus egretta*). The writer visited the locality on September 15, when twenty-seven were counted. By September 27 the number had dropped to sixteen and a week later only one remained, this individual staying on until the middle of October. Ray Lake, for about half of its approximate mile length and less than a quarter mile width, nowhere more than a few feet in depth, is included in the Refuge. This part of the lake is bordered by trees and supports a considerable growth of reeds and other vegetation, and to it the egrets' activities were chiefly confined, usually standing or moving about slowly in the shallow water on the lookout for food. At all times they were very cautious and wary, taking wing whenever close approach was attempted.—HAROLD M. HOLLAND, *Galesburg, Ill.*

A Winter Record of Henslow's Sparrow in Indiana.—While taking a Christmas bird census on December 24, 1933, near Houston, in the western part of Jackson County, Indiana, I flushed a strange sparrow from the tall grass in a fallow field. Not having a gun to collect it, and fearing that the bird could not be found later, I decided to run it down, as it flew a short distance and dropped into the grass. After flushing it a number of times I succeeded in throwing my cap over it. The bird was placed in a cage, but it died during the night. I made a poor attempt to skin the specimen and the damaged skin was sent to Mr. Amos W. Butler of Indianapolis, who identified the specimen as the Western Henslow's Sparrow (*Passerherbulus henslowi henslowi*) and his identification was verified by the National Museum. The skin is in Mr. Butler's collection of bird skins. To the writer's knowledge, this is the first wintering record of this species in Indiana, and one of the few winter records of the species north of the Ohio River.—RAYMOND J. FLEETWOOD, *Kurtz, Ind.*

A Red-tailed Hawk Caught by Hand.—On September 1, 1935, in Cheboygan County, Michigan, I caught an adult Red-tailed Hawk (*Buteo borealis borealis*) with my hands. I discovered the bird sitting on a stump in a large clearing. Keeping a stub of a tree between the hawk and myself, I began to stalk it. Having its back to me made the bird less difficult to stalk. When within a few feet of it, I noticed that the hawk was periodically dozing and preening its feathers. There was good reason for this, for on the stump lay a half-eaten Red Squirrel. When within almost touching distance of the hawk, it apparently heard me, for its body stiffened and it turned its head toward me. At that moment I stood stark still. When the bird turned its head away from me, I caught it. The hawk was very much surprised and frightened upon finding it was caught. While looking it over for any possible injuries, the hawk shook hands with me by driving its talons deep into my hand. I immediately put it down on the stump, where it flew to a tree a short distance away. The hawk appeared to be in good condition. The only other instance of a hawk being caught by hand that I have heard of is that of an Osprey (*Pandion haliaetus carolinensis*).—John J. Stophlet, *Toledo, Ohio.*

Additions to "Bird Life of a Transient Lake in Kentucky".—Since the publication of my article under the above title in the September, 1929, issue of the Wilson Bulletin, there have been four seasons when this lake, caused by an overflow from an underground river system, has remained long enough to attract many species of water and wading birds. In 1932 the lake remained for a little less than a month during late March and early April. In 1933 it became quite large and remained until May 26, but in 1934 all the water had disappeared by May 5. For the third time in over a century, in 1935 the water remained all through the summer, that is until the early days of September.

In my original list there were thirty-two species of water and wading birds. This list has now grown to fifty-six species. The twenty-four species added since 1927, the year of my former study, are as follows:

1. American Egret. First seen in 1933; rather common in the late summer of 1935.
2. Black-crowned Night Heron. Rare in 1934 but common in 1935.
3. Blue Goose. Five stayed for a month on the lake in March-April, 1933.
4. Baldpate. Seen in small numbers in 1933, 1934, and 1935.
5. Shoveller. Common to abundant in 1932, 1933, 1934, and 1935.
6. Redhead. A few recorded in 1934.
7. Ring-necked Duck. Fairly common in 1934 and 1935.
8. Lesser Scaup. Common in 1932 and 1933; abundant in 1934 and 1935.
9. American Golden-eye. A few seen in 1932, 1934, and 1935.
10. Old-Squaw. Two recorded in 1935.
11. White-winged Scoter. Rarely seen in 1934 and 1935.
12. Surf Scoter. A few in 1934.
13. Florida Gallinule. One recorded rarely in 1934. In 1935 I found eight young and several adults.
14. Piping Plover. Plentiful near the end of the 1933 season.
15. Golden Plover. Two records in 1935.
16. Ruddy Turnstone. One record in 1935.
17. Black-bellied Plover. One record in 1933.

18. American Woodcock. A few seen in 1933.
19. Western Willet. Recorded in both spring and fall in 1935.
20. Baird's Sandpiper. Several records for the spring of 1935.
21. Red-backed Sandpiper. Two recorded in the spring of 1935.
22. Long-billed Dowitcher. Two seen in the fall migration of 1935.
23. Wilson's Phalarope. Two females recorded in 1933.
24. Common Tern. Several records for the summer of 1935.

During the season of 1935 I found nests or young birds of the following species: Eastern Green Heron, Black-crowned Night Heron, Blue-winged Teal, Florida Gallinule, and American Coot. Other species that were recorded steadily through the summer, though no nests or young were found, were the Pied-billed Grebe, Great Blue Heron, Shoveller, Lesser Scaup, King Rail and Black Tern. The area where all these species occurred, bear in mind, is normally a cornfield, which is covered with water only in wet springs and summers.—Gordon Wilson, *Bowling Green, Ky.*

The Scarcity of Hawks and Owls in Indiana.—We have very few hawks and owls in Indiana, in comparison with other birds. It is but rarely that I encounter one of these birds on my bird trips, and when I do it is a surprise, as sometimes for many weeks at a time there is not one to be found. To me this is a sad situation, for the balance of nature is something which is being forgotten, along with the forgotten man. When there is a scarcity of species of valuable birds, and many are disappearing because of the effects of civilization upon bird life, we soon may reap the result of our indifference and folly by not stepping in to save them, instead of allowing them to vanish, as they are doing. One thing that is very wrong is to allow certain species to be protected and let killers take any others, when they may not know one from the other, as is the case with most men and boys with guns. Then if they should find that they have killed the wrong bird, which may be valuable from an economic standpoint, they naturally will not tell on themselves as having broken the law, which also is a bad thing on character. This also sets a bad example for others.

I know of many cases in which the innocent bird must suffer for the sins of his tribe, when the man with the gun may not know or care about the harm he may do. Many birds which are valuable, such as the Red-shouldered Hawk, Red-tailed Hawk, Marsh Hawk, American Rough-legged Hawk, Barn Owl, Long-eared Owl, Short-eared Owl, Barred Owl, Snowy Owl, and the rare Hawk Owl (which I have seen but once), are allowed to be killed, while the Screech Owl and Sparrow Hawk only are supposed to be protected. Then under the guise of conservation, hunters go out for sport and as a rule kill at random any bird that is either a hawk or owl and pretend to think they are doing a good turn. Some of the above mentioned birds are indeed rare, yet hunters would kill the last one without a thought. No hunter should be allowed to go into the field unless he knows his birds accurately, for who is going to protect the good birds, or the ones supposed to be protected by law? There are too few who are posted on birds, yet whoever has the price of a hunting license is allowed to go forth at will, without a word of warning about the harm he may do. We have too few real bird friends who stand for their welfare and protection. I know a man, a former judge, who killed an Osprey, thinking he had killed a Bald Eagle. The man who mounted it for him brought it here for identification. It was re-

ported to the proper authorities and the judge was forced to pay a heavy fine for his "catch", which he had bragged about too soon, having a write-up in the papers about it. I passed by a shack in a neighboring state, where there was a Turkey Vulture nailed against the building, with the wings outspread to show passers-by what a large bird had been killed. I was not sure about the law in that state or some one might have had to pay for it. A Snowy Owl, the only one of the kind ever reported here, was shot as it sat in a tree where the snow had settled in spots, but the bird was not seriously injured. The man caught the bird as it fell and brought it in for identification. He was so pleased to learn its name, that he borrowed a cage from me, and said he intended to place the owl in it and put it in the bank window for the people to see. However, I learned afterward that he sold it instead to a showman for $18.00, to exhibit in his show, and I never saw the man or bird cage again.—Mrs. Horace P. Cook, *Anderson, Ind.*

An Indiana Hawk Migration.—On October 21, 1934, the writer made a leisurely east-west auto trip across the state of Indiana, which required all of the daylight hours. The travel route was a zig-zag one, to include wild life habitats of special interest, but was in general near a line drawn from Fort Wayne, Indiana, to Danville, Illinois. Of great interest was the observation of a rather unusual hawk migration. At least one hawk was observed during each fifteen minute period between dawn and darkness, except for two. However, no hawk concentrations were observed, the flight being evenly distributed both as to numbers and species. The greatest number of hawks under observation at one time was three.

Because of the distance at which many individuals were observed and the time available for observation, some birds are listed below without complete identification. Those interested in the conservation of the birds of prey will be gratified by the fact that it is still possible, under most unusual circumstances, to observe in one day such a large number of hawks. However, as with waterfowl, occasional concentrations may not necessarily indicate actual numbers throughout the range. It will be of interest to note that the most numerous species listed are those which for the most part are the most difficult to shoot. Obviously some species were more conspicuous at greater distances than others, or were more readily identified. This flight can be considered remarkable because of the broad territory it covered and the many species involved. It is by far the largest hawk flight ever observed by the writer, except along mountain ridges or near large bodies of water.

Below is a list of the species recorded and the number of each. The eleven species total 174 individuals.

6—Turkey Vulture (*Cathartes aura septentrionalis*)
5—Sharp-shinned Hawk (*Accipiter v. velox*)
64—Cooper's Hawk (*Accipiter cooperi*)
12—Unidentified Hawks (*Accipiter* sp.)
1—American Rough-legged Hawk (*Buteo lagopus s. johannis*)
26—Eastern Red-tailed Hawk (*Buteo b. borealis*)
3—Northern Red-shouldered Hawk (*Buteo l. lineatus*)
4—Broad-winged Hawk (*Buteo p. platypterus*)
11—Unidentified Hawks (*Buteo* sp.)

1—Northern Bald Eagle (*Haliaeetus l. leucocephalus*)
18—Marsh Hawk (*Circus hudsonius*)
2—Eastern Pigeon Hawk (*Falco c. columbarius*)
21—Eastern Sparrow Hawk (*Falco s. sparverius*)
—Lawrence E. Hicks, *Ohio State University, Columbus, Ohio.*

Observations of Bird Life in Green Bay.—Green Bay extends from Fort Madison, Iowa, northward ten miles to the small stream known to Iowans as Skunk River, and has an average width of five miles.

As I recall my adventures and strange experiences within the area, I recollect my observations of the American Bittern (*Botaurus lentiginosus*). I remember on one occasion one of these birds walked into my field of view, giving me the opportunity of seeing it produce the booming note which it creates in the spring. The bittern remained motionless for about fifteen minutes, uttering its hollow note "*plunk-er-lunk*". In producing the sound the bird gulped in air by a forward movement of the head and snapping of the bill, then expelled it rapidly. In the act the throat was distended.

In the spring of 1934 my boat transported me to unfrequented sections of the Bay to observe Great Blue Herons (*Ardea h. herodias*). It was my pleasure, on one occasion, to observe forty-four of these beautiful "feathered fishermen" feeding. Motionless they waited for their prey to come within reach, or went in search for it, then stabbed their six-inch bill through it. Once stabbed, the morsel of food, usually a small fish, but not always, was thrown into the air to be caught in a gaping mouth.

Here and there among the Great Blue Herons, eighty-four American Egrets (*Casmerodius alba egretta*) were feeding. These snowy white crane-like birds made their appearance in southern Iowa this year earlier than they usually do. The habits of these birds I found were similar to those of the Great Blue Heron. While afloat by night in the Bay I could hear the hoarse squawk of Black-crowned Night Herons (*Nycticorax nycticorax naevius*) as they left their roost, to wing their solitary way to a chosen feeding place.

From April until the middle of June Double-crested Cormorants nested in Green Bay. This is the first time these birds have nested within this area since 1897. About ninety nests were sighted.

At the close of this paper, may I suggest that my readers visit Green Bay, should the grand opportunity present itself? I understand that the area has been turned into an Iowa fish reserve. It is the author's wish that the necessary action be taken to protect all of the birds that nest therein. As an ardent bird lover, I think it is a grand event to visit Green Bay, and observe thousands of wild birds in their native haunts.—Lawrence E. Hunter, *Dallas City, Ill.*

Peculiar Actions of a Great Blue Heron.—On September 1, 1935, while out for a stroll, when I arrived at the edge of a patch of timber bordering on a small stream a Great Blue Heron took flight from one of the tree-tops farther on in the woods, circled over me several times while making the squawking noises common to that species, and then returned to the tree-top. I thought it had become alarmed at my approach. I entered the woods, when it again left its perch, circled over me squawking as before, but this time much louder. I watched it for a minute but it kept right on circling and squawking. I moved on, occasionally stopping and looking. Finally the heron alighted in a tree a few rods

ahead. I started toward it, and as I neared the tree a Barred Owl flew from an adjoining tree. The heron took after the owl, squawking, and followed it across a small opening in the woods. When the owl had disappeared the heron returned and alighted at the edge of the stream, quite contented. Was this heron actually trying to attract my attention to the hiding place of the owl? It seemed that way to me, for I had been in the vicinity of this woods for a long time before this happened and up to that time the heron had made no commotion or I should have noticed it.—F. W. Rapp, *Vicksburg, Mich.*

Some Bird Notes from Central Illinois.—Blue Goose (*Chen caerulescens*). Three Blue Geese were seen March 19, 1933, three miles southwest of Manito, at the edge of a small pond, by W. C. Van Deventer and the author.

Osprey (*Pandion haliaetus carolinensis*). On April 6, 1935, W. Kannapal and the author saw an Osprey near Spring Lake. The bird was noted several times. The last date of observation was May 12, 1935.

Florida Gallinule (*Gallinula chloropus cachinnans*). A crippled male bird was found in Peoria, July 22, 1934. The bird died within a few days, refusing to take food of any kind. The skull was saved.

Arctic Three-toed Woodpecker (*Picoides arcticus*). V. H. Chase saw two of these birds at close range January 11, 1925, in the city of Peoria. The observation followed a severe sleet storm.

Evening Grosbeak (*Hesperiphona vespertina vespertina*). Dr. W. Packard reports having seen six Evening Grosbeaks in early April of 1934, near Banner. The birds remained in the vicinity for about three weeks.—William C. Starrett, *Peoria, Ill.*

The Cruising Speed of the Golden Plover.—While on a business trip across the fertile Hornick Bottoms south of Sioux City, Iowa, on October 1, 1935, the writer had a splendid opportunity to determine the speed of the Golden Plover (*Charadrius dominicus dominicus*). A flock of about thirty of these birds was first noticed flying parallel to the highway and just inside of the fence line. The speed of the car at this time was an even sixty miles per hour. The birds were, however, pulling away from the car at this speed, but by increasing the speed of the car to seventy miles per hour I was able to keep even with the plovers. This pace was kept up for nearly a mile until the birds swerved out over a field and were soon out of sight. I think that this speed is not unusual for the Golden Plover and had danger threatened in the form of one of the large falcons, this speed probably could have been increased quite a bit more, for a short distance.—Wm. Youngworth, *Sioux City, Iowa.*

Bird Notes from Anderson, Indiana.—This spring (1933) we had the honor of a call from a Woodcock. It came to our back yard, but disappeared with a whir of wings as a member of the family almost stepped upon it. We live but four blocks from the center of the city, yet our yard is a small wilderness which many birds of unusual varieties visit, owing to its many attractions for birds of almost every kind. The back of the lot is entirely filled with dense shrubs, suitable for birds, with a hidden rockery and bird bath and leaves left as they fall, thus attracting many birds of the wilderness. We have room for only a flagstone walk through the place, and in the hot summer weather birds collect in this cool spot, where water and shelter attracts them and bird enemies are few.

Last spring (1932) the Whip-poor-will came to this place. It was the second bird of the kind that I have seen in this part of the state since 1900. The other was about five miles away in a wild woods. I had a close up of the bird for some time, as it stayed about the place most of the day on or near the ground. Another Whip-poor-will was seen later in the spring near this city in an open woods.

For two years the Prothonotary Warbler has visited this neighborhood, coming both times to the yard back of us—an old-fashioned place with dense shrubbery of all kinds. In 1932 this bird lingered about the place for several weeks, singing his loud, clear, ringing song time and again as I imitated him. He was seen repeatedly creeping in and out of a water spout that was broken loose at the eaves of the upper story of the house next door to this one. We might have believed that he nested there only we saw no female during this time. His song of "*sweet*" or "*tweet*", repeated several times, reminded me of those of the Connecticut Warbler and the Kentucky Warbler, which are similar, to me. Neither of the two last-named birds are common in this vicinity, but I have seen both occasionally, and heard the former sing once. The Kentucky Warbler is in Mounds State Park, and was noted twice this spring. I also saw it in the cemetery here. It generally is near the ground and about running water. At the Mounds once this spring, it was seen singing in a tree.

The Connecticut Warbler and the Blue Grosbeak, both most rare birds in this part of the country, appeared as if by magic within a few feet of me as I sat on a stump watching for thrills one spring morning in a wild cut-over woods east of the city. I have seen the Blue Grosbeak three times in all, twice in Indiana and once at Chicago. At this place I heard a strange song in one of the Chicago forest preserves, and watched for the bird only to see a young male in his mottled blue and brown immature plumage rise from the ground and perch in a small tree or shrub and warble his melody right in front of me. That is a bird experience I shall not soon forget.

One day this summer when I was away on a bird trip the Golden-winged Warbler came to my back yard and took a bath in the shallow pool. The boy next door, a young ornithologist, could hardly wait to report this find, as this bird is most rare in Indiana. It was identified by his brother, another bird student. Both boys are very careful to be correct in their identifications. The Pine Warbler also visited my lawn, and peered at me from a short distance away near the back porch shrubbery. All five of the thrushes came each spring—the Wood, the Wilson, the Gray-cheeked, the Olive-backed, and the Hermit (which comes first). The Cardinal, which has been here for three years, winter and summer, has nested here twice and is building the second nest now, on June 23. This time it is in the *Aralia spinosa*, where the thorns hold it securely in place. The tragedy of bird life is appalling, the whole brood many times being lost to the Blue Jays or cats which accidentally get by the "standing army" in the house. I seldom have to resort to violent means with birds, but one must choose between bird friends and enemies, and the Blue Jay is a greater criminal than most persons believe. Such persons want him saved because he is beautiful, and some folks try to tell us that "their cat" does not catch birds.

The Rose-breasted Grosbeak during the first year is quite unlike the adult male bird. The black areas are dull brown with a small amount of white dotted through the plumage. There is no decided rose color on the throat and breast.

but a faint pink, barely hinting at the beautiful rose color that comes later on. A bird of this kind sang in my yard this spring (1933), but his song was not as full and confident as that of the adult male. The latter seemed to sing sweetly, "*Pretty Carrie, pretty Carrie, pretty pretty Carrie*". Sometimes he varied it somewhat and added a few other complimentary adjectives, and repeated his notes, making quite a long warble, but mostly his song was as above, composed of twelve or fourteen notes as a rule. One male bird kept up a continuous warble for a minute or two before he stopped singing. There were six of these birds in an elm tree at the same time, and they lingered about the place off and on for about ten days or two weeks on their way north. The young male birds as a rule sing a more choppy song than that of the adult male bird. Perhaps it is because their voices are changing.

I once saw an immature male Redstart in mottled plumage. He was in a woods in the spring. His song was so amateurish that I did not recognize it until I saw him. His coat was blotched red, yellow, and black, making a most peculiar appearance, for he was changing from the gray and yellow of the first plumage, like the female, to the orange-red and black of the male at the spring of the next year. I also saw a young male Scarlet Tanager in adolescent plumage. He was beautiful in his splashed and blotched red and brassy-yellow coat, but his song was not up to his coloring. These changing males of various kinds are uncommon, and I know of few who have seen them. The dress of the young male Baltimore and Orchard Orioles as they chhange to the adult male attire are also most interesting. It is a most fascinating study to watch these odd birds.—Mrs. Horace P. Cook, *Anderson, Ind.*

PROCEEDINGS OF THE WILSON ORNITHOLOGICAL CLUB

By Lawrence E. Hicks, Secretary

The Twenty-first Annual Meeting of the Wilson Ornithological Club was held at St. Louis, Missouri, on December 29-30-31, 1935, in connection with many other organizations affiliated with the American Association for the Advancement of Science. The business and program sessions were held in the Alexander Room of the Melbourne Hotel. Short business sessions were held Monday and Tuesday mornings. The four program sessions Monday and Tuesday, morning and afternoon, and the banquet program session, included thirty-eight papers, slide talks, and movie presentations. The maximum attendance at each session was 66, 92, 72, 96, and 70.

Tuesday evening he Wilson Ornithological Club Annual Dinner was held at the Sayman Town Club, seventy being present. The chairman of the local committee, Mr. A. F. Satterthwait, served as toastmaster. Miss Lillie R. Ernst, Principal of Blewett High School, gave the address of welcome, to which President Josselyn Van Tyne responded for the Wilson Ornithological Club. A score of those present were introduced or called upon for brief remarks. Following this the group adjourned to the auditorium for the evening program session. Mr. H. M. Kennon, Ornithologist of the St. Louis Zoo, gave a lecture on "The Hummingbirds", with a fascinating account of experiences with a score of captive Ruby-throats kept at the Zoo. Professor A. E. Shirling of Teachers College, Kansas City, gave a beautifully illustrated lecture on "Some Habits and Habitats of Birds in the Rocky Mountain National Park". Mr. Albert F. Ganier of Nashville, closed with a splendid illustrated discourse on "Rare Nesting Birds of Tennessee".

Monday evening, and other free time during the three days of the meetings, was utilized by those present to hear the address of the retiring president of the A. A. A. S. or to visit the science exhibits, the Municipal Auditorium, the St. Louis Parks, Forest Park with the Zoo and its splendid collections of live birds, reptiles, and primates, the Jefferson Memorial with the Lindbergh trophies, the Art Museum, the Educational Museum, the arboretum of Tower Grove Park, the Missouri Botanical Garden (Shaw's Garden), other points of interest in St. Louis, or in attending sessions of some of the sections of the A. A. A. S. at Washington University.

Sunday, December 29, was spent in field work by thirty-two members. The party motored from the hotel to the west of St. Louis to Creve-Coeur Lake and the interesting adjacent lowlands, then to Horseshoe Lake on the Illinois side. After noon luncheon at Garavellis, the group split, some to view the Aviary at the Zoo, others to continue field work in areas north of the city. The heavy snow, temperature of about 20 degrees, and the light wind, kept the list seen down to 35 species and 931 individuals. The list included Rough-legged Hawk, Barred Owl, Pileated Woodpecker, Yellow-bellied Sapsucker, Brown Creeper, Mockingbird, Robin, Bluebird, Myrtle Warbler, European Tree Sparrow, Red-winged Blackbird, Towhee, Fox Sparrow, and White-throated Sparrow.

Attendance

The 1935 meeting was one of the most successful in the history of the organization despite the fact that the attendance was smaller than for any of our last six meetings, save one. The total registration (106) was low due to the small local attendance and the adverse weather conditions which prevented many out-of-town visitors from using auto transportation. However, eighty-three were present from outside of St. Louis and sixty-five from outside of Missouri. A large number, particularly local visitors, failed to register. Additional unregistered visitors attended the annual dinner or participated in the field trip.

Forty eight universities, colleges, museums, and other institutions were represented in the attendance at the St. Louis meeting. These included: Cornell University, Ohio State University, University of Illinois, University of Wisconsin, University of Missouri, George Peabody College, University of Iowa, Iowa State College, University of Nebraska, Morningside College, Otterbein College, University of Michigan, Western Reserve University, Emergency Conservation Committee, National Association of Audubon Societies, Hawk and Owl Society, Missouri Division of Conservation, Mississippi Department of Fish and Game, Michigan Museum of Zoology, Chicago Academy of Sciences, United States Biological Survey, National Park Service, United States Soil Conservation Service, University of Virginia, University of Tennessee, Lebanon Valley College, Bowling Green College, St. Louis Zoological Gardens, North Dakota State Teachers College, North Dakota Agricultural College, Ashville Teachers College, United States Bureau of Entomology, St. Louis University, St. Louis Educational Museum, Christian Brothers College, St. Louis Bird Club, Webster Groves Nature Club, Mayo Clinic, Michigan Western State College, Louisiana State University, Purdue University, Wheaton College, Illinois Natural History Survey, Missouri Biological Survey, Illinois State Normal College, Principia College, American Nature Study Society.

Business Sessions

Short business sessions were held Monday and Tuesday mornings, President Van Tyne presiding.

The minutes of the 1934 meeting were approved without being read, since they had previously been published in the Wilson Bulletin (Vol. XLVII, No. 1, pp. 81-95). The Secretary's and Treasurer's reports for the year 1935 were next read and approved. The Secretary's report indicated that during the past year forty-eight members had assisted in the membership campaign by making nominations resulting in the securing of one or more members each. A list was presented of the 141 new members secured during 1935, and previously confirmed by the electoral board. These were elected to membership. The report showed that there had been a net gain of 63 members in 1935, resulting in a total membership of 784, which exceeds by nine members the previous high in membership total established in 1930.

The Secretary also presented a bundle of 219 letters received from members in thirty-six states, each of which, though unable to attend the St. Louis meeting, had written a letter acknowledging the meeting notice, expressing regret at being unable to attend, and sending best wishes for the success of the meeting. Excerpts were read from a number of them. The receipt of so many unsolicited letters indicates that the great bulk of the Wilson Ornithological Club membership consists of persons actively interested in furthering the ornithological studies

and the educational and conservation work sponsored by the organization. The members assembled paid tribute to these absent members and the Secretary expressed his thanks for the many encouraging and stimulating news letters received from the members throughout the year, and voiced his regret at being unable to reply except by brief delayed notes or through the pages of the WILSON BULLETIN.

The Editor next presented a carefully prepared report of his activities to the group, giving some conception of the many duties and difficulties involved in the office, the present status of the WILSON BULLETIN, and recommendations for the coming year. In the absence of the Librarian, his report was read. In approving the Treasurer's report, the group unanimously passed a resolution commending retiring Treasurer Rosene for his splendid work during the trying economic conditions of his six-year term of office.

The following temporary committees were appointed by the President: Nominations, Mrs. H. J. Taylor, Jesse M. Shaver; Resolutions and Amendments, A. F. Ganier, Leonard B. Nice, Edith R. Force; Auditing, Myron H. Swenk and S. E. Perkins, III.

The committee on Resolutions offered the following resolutions, all of which were adopted by motion:

Resolved, that the Wilson Ornithological Club commends the United States Biological Survey for its policy of shortening the open season and restricting the kill of waterfowl during the 1935 season.

Resolved, that the Wilson Ornithological Club go on record as emphasizing the principle that the wild life resources of the United States, including game species, belong to the whole people and not alone to hunters or any other special group, and that game management practices and hunting regulations should be fostered which will not endanger the breeding stock of any species, and which where desirable will tend to increase it.

Resolved, that the members of the local committee, A. F. Satterthwait, Lillie R. Ernst, Elizabeth Golterman, Clara Heising, D. M. Hetler, also the officers of the A. A. A. S., the management of the Melbourne Hotel, Ann Loftus and Mrs. A. F. Satterthwait, and the St. Louis Chamber of Commerce, be commended for their part in the arrangements for a splendid annual meeting at St. Louis.

Resolved, that the officers of the Wilson Ornithological Club, particularly those three upon which such a heavy burden falls, the Editor, Secretary, and Treasurer, be thanked for their efforts of the past year in carrying on so splendidly the work of the organization.

The Committee on Nominations offered the following report:

President—Josselyn Van Tyne, Museum of Zoology, Ann Arbor, Michigan.
First Vice-President—Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois.
Second Vice-President—Margaret M. Nice, Columbus, Ohio.
Secretary—Lawrence E. Hicks, Ohio State University, Columbus, Ohio.
Treasurer—S. E. Perkins, III, 709 Inland Building, Indianapolis, Indiana.
Councillors—Lynds Jones, Oberlin, Ohio.
A. F. Ganier, Nashville, Tennessee.
W. M. Rosene, Ogden, Iowa.

The report was adopted by motion, and the Secretary was instructed to cast a unanimous ballot for the nominees. This being done all were declared elected for the coming year.

The concensus of opinion as expressed by the officers, councillors, and members present, and the replies from the questionaire in the annual letter, was that the 1936 Annual Meeting of the Wilson Ornithological Club should be held at Chicago, Illinois, sometime during the month of October or November. More detailed announcements will be made later. Following the completion of the general program the session adjourned *sine die*.

Program of Papers

The papers, with brief abstracts, are listed below in the order presented, which differs somewhat from the previously announced program. All meetings were held in the Alexander Room of the Melbourne Hotel, except for the Banquet Session, which was held at the Sayman Town Club.

Monday Morning Session

1. A Study of the Nesting of the Common Coot (*Fulica americana*). (10 minutes). George O. Hendrickson, Iowa State College, Ames, Iowa.

   An analysis of ecological conditions, life history studies, and mortality factors found during the observation of twenty Coot's nests in two marshes of northern Iowa in June and July of 1935.

2. The Future of Waterfowl Protection. (10 minutes). Irving Brant, St. Louis Star, St. Louis, Mo.

   A critical analysis of the North American waterfowl resources of today with definite recommendations as to policies, protection, and management procedures which should best serve to perpetuate these species.

3. Food Habits of Buteo Hawks in North Central United States. (15 minutes). Paul L. Errington, Iowa State College, Ames, Iowa, and Walter J. Breckenridge, University of Minnesota, Minneapolis, Minn. (Read by Robert B. Gordon).

4. Resident Game Birds of Missouri. (30 minutes). (Lantern). Rudolf Bennitt, University of Missouri, Columbia, Mo.

   A summary of a comprehensive game and fur survey of the State made by W. O. Nagel and the speaker in 1934-1935 under the auspices of the National Park Service E. C. W. Only breeding species were considered, the most important of these being the Bob-white, Ruffed Grouse, Prairie Chicken, Ring-necked Pheasant, Wild Turkey, and Mourning Dove. Subjects discussed included the present status of each, historical influences, releases of stock, general methods, objectives, estimated population of each species today, annual kill, and drouth effects.

5. Education of Children and Adults in Bird Study. (10 minutes). Edith R. Force, Tulsa High School, Tulsa, Oklahoma.

   A synopsis of proven methods of education in bird study and an inspirational appeal for recognition of the value of, and necessity for, more extensive activities in this direction.

6. Home Life of Some Far Northern Birds—the Churchill Region. (30 minutes). (Lantern). A. Marguerite Heydeweiller, Cornell University, Ithaca, N. Y.

   A pictorial account of nesting and life history studies of Tree Sparrows, Redpolls, Longspurs, Shorebirds, Gulls, Jaegers, Ptarmigans, Warblers, and Terns during two summers in the Hudson Bay region.

Monday Afternoon Session

7. Ornithology in Scientific Literature. (15 minutes). O. A. Stevens and H. Gordon Heggeness, North Dakota State College, Fargo, N. D.

   The amount of published material is too large and too often improperly organized. Ornithology is peculiar in the mass of detail and in the large

quantity of borderline scientific-popular material in its literature. Specific recommendations are: cöoperation between workers, more editorial supervision, segregation of scientific and popular material, and suppression of, or collection of, short items.

8. Building Conservation for the Future. (15 minutes). Roger T. Peterson, National Association of Audubon Societies, New York, N. Y.

   Specific recommendations for conservation of valuable wild life resources, with suggestions as to how various conservation organizations and individuals can make definite contributions to the task at hand.

9. The Cowbird as a Subject of Study. (20 minutes). Margaret M. Nice, Columbus, Ohio.

   The Cowbird is not specialized for parasitism as is the European Cuckoo, for its eggs are relatively small, its incubation period is no shorter than that of its relatives, and young Cowbirds do not evict their nest mates. On Interpont (in Columbus, Ohio) Cowbirds are gregarious during the nesting season and have laid in 26 per cent to 77.7 per cent of the early Song Sparrow nests studied during a five year period. Adult Cowbirds removed 5.7 per cent of the Song Sparrow eggs, and young Cowbirds crushed or starved 3.5 per cent of the Song Sparrow young. However, Cowbird eggs have not succeeded as well as those of their hosts, for only 30.7 per cent of the former while 35.8 per cent of the latter were fledged. In 1930-1931 there was one female Cowbird to about 11.5 pairs of suitable hosts, but in 1934 and 1935 there was one female to 8.6 pairs of suitable hosts.

10. Presentation of and Remarks by Ira N. Gabrielson, Chief, United States Biological Survey, Washington, D. C.

    A review of the Survey's program for the coming year with a narration of the many facts and events of ornitholigical interest.

11. Sex Ratio and Mortality Studies of English Sparrow Nestlings. (15 minutes). (Lantern). Leon J. Cole and G. W. Woolley, University of Wisconsin, Madison, Wisc.

    Sex was determined on 746 sparrow nestlings and 69 embryos. Of the total, 48.8±.017 per cent were males, which is not a significant deviation from equality. However, there appears to be a definite tendency for a higher percentage of males in late June and early July than earlier or later in the season. The average number of nestlings in 279 nests was 2.7. There is a high mortality of nestlings as age increases, but no evidence that this mortality is differential with respect to sex.

12. A Behavior Study of an Eastern Meadowlark. (12 minutes). (16 mm. motion pictures). Thomas B. Magath, Mayo Clinic, Rochester, Minn.

    A pictorial record of a wild female Meadowlark which came with young and procured food at the station, or even from the hand, for two seasons.

13. Episodes in the Life of Audubon in Indiana. (20 minutes). Samuel E. Perkins, III, Indianapolis, Ind.

    A review of various trips taken by the naturalist within the State of Indiana, covering the Ohio River country and southern Indiana north to Vincennes. He visited with General George Rogers Clark, with Rafinesque, and with the scientific group at New Harmony, on one or several occasions.

14. Wisconsin Pioneers in Ornithology: Thure Kumlien and Ludwig Kumlien. (30 minutes). (Lantern). Mrs. H. J. Taylor, Berkeley, Calif.

    A biographical account of Thure Kumlien with special consideration of the ornithological work by himself and his son, Ludwig Kumlien.

TUESDAY MORNING SESSION

15. Checking Field Observations by Studies of Confined Birds. (10 minutes). George B. Happ, Principia College, Elsah, Illinois.

16. Hybridism in the Genus Hedymeles (Grosbeaks). (15 minutes). Myron H. Swenk, University of Nebraska, Lincoln, Nebr.

    A discussion, illustrated by distribution maps and paintings, of hybridism between the Rose-breasted Grosbeak and the Black-headed Grosbeak in the Mississippi-Missouri basin.

17. A Melanistic Phase in the Wilson's Snipe. (10 minutes). Josselyn Van Tyne, University of Michigan, Ann Arbor, Mich.

    Exhibit of a melanistic specimen of the Wilson's Snipe taken in Michigan, with comments on the parallel case of the "*sabini*" phase of the Common Snipe (*Capella gallinago gallinago*) of the British Isles.

18. Seasonal Sex Characters in African Weaver Finches. (20 minutes). (Lantern). Emil Witschi, University of Iowa, Iowa City, Iowa.

    An experimental analysis of the factors (genetical and hormonal) which control the assumption of breeding and of eclipse plumages in finches, especially indigo buntings, and African weaver finches. Discussion of the bearing of these results on the problem of the evolution of hen and cock plumage in birds.

19. Nesting Habits of the Tree Sparrow. (20 minutes). (Lantern). A. Marguerite Heydeweiller, Cornell University, Ithaca, N. Y.

    A summary of the life history of this species as learned from observations on individuals marked with feather plumes in the Churchill region of Canada.

20. Some Aspects of Bird Population Problems. (20 minutes). Margaret M. Nice, Columbus, Ohio.

    Three scientists are working out theories of animal populations by means of mathematical calculations, namely, V. Volterra, S. A. Severtzoff, and A. J. Nicholson. Severtzoff contends that populations tend to increase as fast as they can and then are decimated by a plague, either a biotic or epidemic disease. Nicholson emphasizes the "balance of populations", and believes that competition is the controlling factor. The theories of these two men were discussed and compared with the author's findings in a seven year study of a population of Song Sparrows.

21. A Preliminary Report on a Comparative Study of the Leg Muscles of Birds. (20 minutes). (Lantern). George E. Hudson, University of Nebraska, Lincoln, Nebr.

    Avian myology is a much neglected field. The only leg muscles that have been seriously investigated from a comparative standpoint are the thigh muscles and certain flexor tendons of the foot. A study of several species of Buteonid hawks and falcons indicates that these two groups differ radically in their musculature. The flycatchers and swallows agree in one respect that sets them off from the other Passeriformes examined. These points must be investigated in many more forms before definite conclusions can be reached.

22. Reproductive Activities in the Domestic Pigeon. (20 minutes). (35 mm. motion pictures). Leon J. Cole, University of Wisconsin, Madison, Wis.

    This film illustrated the nesting of the domestic pigeon, including egg laying, incubation and rearing of the young, and showing particularly the method of regurgitation by which the young are fed.

Tuesday Afternoon Session

23. Observations on the European Starling. (5 minutes). Mrs. Howard S. Benedict, Shaker Heights, Ohio.

    Close observation of a male Starling at Mrs. Benedict's home in Shaker Heights, Ohio, in June, 1935, proved him to be quite a mimicker of several of our common birds, including the Blue Jay, Bob-white, Brown Thrasher, Cardinal, Catbird, House Wren, Meadowlark, Phoebe, Robin, and Song Sparrow. These songs were easily recognized. Other songs uttered were doubtless in imitation of still other species.

24. Behavior Studies of the Tufted Titmouse at Feeding Stations. (15 minutes). R. D. Book, Corning, Ohio.

    The author maintained a feeding station in a natural park for twenty-five years. Tufted Titmice came to know him and fed from his hand. These birds collect in clans in the winter. One year a one-legged Titmouse appeared in one of the clans. When spring came this bird was unable to secure a mate. After a week or two of unsuccessful search it was accepted into the company of the mated pair which claimed the territory. It stayed with them summer and winter, attending them closely day and night. After this experience the unattached bird found a mate in February of the next year. A little later they departed together, and were not seen again. Titmice stay in one territory for about three years. With the influx of new birds they leave or are driven away.

25. The Significance of the Ornithological Research Collection. (20 minutes). Josselyn Van Tyne, University of Michigan, Ann Arbor, Mich.

    An analysis of the ends which are served by ornithological research collections with remarks on certain current misconceptions concerning them.

26. Observations on the Life History and Food Habits of the Great Horned Owl. (20 minutes). (Lantern). Frederick M. Baumgartner, Cornell University, Ithaca, N. Y.

    Numerous nest studies on this species near Ithaca were summarized in charts and tables.

27. Notes on the Owls of Iowa. (20 minutes). (Lantern). W. M. Rosene, Ogden, Iowa.

    A report by means of lantern slides of numerous nest studies of owls. Considerable ingenuity was shown in securing photographs of nests in tall trees.

29. Birds of Protected Areas—Bear River Marshes, Rainy Sanctuary, and the Yellowstone. (45 minutes). (16 mm. motion pictures). Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Ill.

Tuesday Evening Session

30. The Hummingbirds. (25 minutes). H. M. Kennon, St. Louis Zoo, St. Louis, Mo.

31. Some Habits and Habitats of Birds in the Rocky Mountain National Park. (30 minutes). (Lantern). A. E. Shirling, Kansas City Teachers College, Kansas City, Mo.

32. Rare Nesting Birds of Tennessee. (20 minutes). (Lantern). Albert F. Ganier, Nashville, Tenn.

The following papers were read by title:

33. Homing Instincts of Wild Birds. William I. Lyon, Waukegan, Ill.

34. Further Notes on the Protocalliphora, Parasites of Nestling Birds. Edward S. Thomas, Ohio State Museum, Columbus, Ohio.

35. Thirty-five years of Bird Migration in Northern Ohio. Lynds Jones, Oberlin, Ohio.

36. Relation of Peck Dominance to Maize Running Ability and Reproduction in the Canary (*Serinus canarius*). Hurst Shoemaker, University of Chicago, Chicago, Ill.

37. Measurements of Animal Populations. Lawrence E. Hicks, Ohio State University, Columbus, Ohio.

38. Coloration of Lantern Slides. Slide Examples Including Pictures of the Ivory-billed Woodpecker in Louisiana. George M. Sutton, Cornell University, Ithaca, N. Y.

REGISTER OF ATTENDANCE AT THE ST. LOUIS MEETING

From CALIFORNIA: Mrs. H. J. Taylor, Berkeley. From COLORADO: Ralph B. Swain, Fort Collins. From ILLINOIS: A. M. Bailey, Roy V. Kommarek, Earl G. Wright, Chicago; George B. Happ, Elsah; Mabel Spenser, Granite City; H. J. Long, George E. Moreland, Greenville; Fremont Arbeiter, Jacob; John E. Fraley, Normal; George E. Ekblaw, Ralph E. Yeatter, Urbana; J. Clifford Stickney, Wheaton. From INDIANA: S. E. Perkins, III, Indianapolis; M. L. Fisher, Charles R. Jordan, R. E. Jordan, L. A. Test, West Lafayette. From IOWA: Logan J. Bennett, George O. Hendrickson, Hugo E. Press, Ames; Lillian Serbousek, Myra G. Willis, Cedar Rapids; Emil Witschi, Iowa City; W. M. Rosene, W. M. Rosene, Jr., Ogden; Mary L. Bailey, Ruth B. McDonald, T. C. Stephens, Sioux City. From KANSAS: Gladys Beck, Kansas City. From KENTUCKY: Mabel Slack, Louisville. From LOUISIANA: O. W. Rosewall, Baton Rouge. From MICHIGAN: F. J. Hinds, Kalamazoo; Josselyn Van Tyne, Ann Arbor. From MINNESOTA: T. B. Magath, Rochester. From MISSISSIPPI: Fannye A. Cook, Jackson. From MISSOURI: L. E. Dennig, Jack Stupp, Clayton; Rudolf Bennitt, John A. Cameron, Columbia; A. E. Shirling, Kansas City; Clara J. Beerman, Gertrude E. Maull, Kirkwood; Angelica Frisch, Jeannette Schrage, Oran; E. R. Thro, St. Charles; J. O. Ballard, Mary B. Birkichs, Irving Brant, Adele Christ, Arthur Christ, Louis Dougan, L. R. Ernst, Alma Fletcher, Elizabeth Golterman, Lucile Hanna, Gretcher M. Happ, Clara Heising, Albert A. Henize, H. M. Hinnon, Lonnie Laird, Hubert Lewis, Anne Loftus, Amelia Meissner, A. M. Obrecht, Mildred Widmann Phillips, Ray S. Snider, Glenna Spencer, Louis M. Weber, Laura E. Whelfrley, St. Louis; Cora Shoop, Steelville; Mrs. Maud C. Mattinger, Warrensburg; Sterling P. Jones, Charlotte Manger, James Manger, Mrs. J. H. Manger, Mr. and Mrs. A. F. Satterthwait, Webster Groves. From NEW YORK: Robert F. Hart, Buffalo; F. M. Baumgartner, Ithaca; R. T. Peterson, New York City; A. Marguerite Heydweiller, Rochester. From NORTH CAROLINA: Ethel B. Finster, Ashhville. From NORTH DAKOTA: H. Gordan Heggeness, Fargo; Perna M. Stine, Minot. From NEBRASKA: Mr. and Mrs. L. M. Gates, George E. Hudson, Mr. and Mrs. Myron H. Swenk, Lincoln. From OHIO: E. L. Moseley, Bowling Green; Mrs. H. S. Benedict, Compton Crook, Cleveland; Robert B. Gordon, Lawrence E. Hicks, Leonard B. Nice, Margaret M. Nice, Raymond Osborne, John H. Schaffner, Columbus; R. D. Book, Corning. From OKLAHOMA: Edith R. Force. From PENNSYLVANIA: V. Earl Light, Annville. From TENNESSEE: W. K. Butts, Chattanooga; Albert F. Ganier, Jesse M. Shaver, Nashville. From VIRGINIA: John B. Calhoun, University. From WASHINGTON, D. C.: Paul Bartsch, H. C. Bryant, Ira N. Gabrielson. From WISCONSIN: L. J. Cole, G. W. Woolley, Madison.

SUMMARY OF ATTENDANCE: California, 1; Colorado, 1; Illinois, 12; Indiana, 5; Iowa, 11; Kansas, 1; Kentucky, 1; Louisiana, 1; Michigan, 2; Minnesota, 1; Mississippi, 1; Missouri outside of St. Louis, 18; St. Louis, 24; New York, 4; North Carolina, 1; North Dakota, 2; Nebraska, 5; Ohio, 10; Oklahoma, 1; Pennsylvania, 1; Tennessee, 3; Virginia, 1; Washington, D. C., 3; Wisconsin, 2. Total attendance, 112. Total outside of St. Louis, 88. Total outside of Missouri, 70. Maximum number at each program session: Monday morning, 66; Monday afternoon, 92; Tuesday morning, 72; Tuesday afternoon, 96. Number on field trip, 32. Number at Annual Dinner, 70. Number of papers listed on the program, 38.

REPORT OF THE SECRETARY FOR 1935*

To the Officers and Members of the Wilson Ornithological Club:

During the past year, an intensive campaign for new members was continued by the Secretary, in an attempt to bring a halt to the steady decrease in number of members, which has been the general rule in our own organization as well as in most others, during these last five years of turbulent economic conditions. This objective has now been accomplished. It is a great pleasure to report that our organization is now considerably larger than a year ago.

The Secretary solicited more than 1450 membership prospects during the past year, in addition to sending out more than 1240 other letters in the course of his regular duties. Members of the Club gave splendid assistance by sending in numerous names of prospective members for solicitation. Our membership is especially urged during the coming year to attempt to acquaint friends with the benefits of the organization and forward to the officers the names of all membership prospects. We will do the rest.

The membership campaign has been quite successful. In 1932, 113 new members were secured, in 1933, 114, and in 1934, 112. In 1935, 141 new members were added to the rolls. These 141 new members were: Sustaining, 1; Active, 22; and Associate, 118. The new members were distributed through thirty-seven states and provinces: Missouri, 16; Kentucky and Illinois, 10 each; Ohio, Michigan, and New York, 9 each; Virginia, 8; Iowa, Massachusetts, and Minnesota, 5 each; Wisconsin, Pennsylvania, Ontario, Texas, and Tennessee, 4 each; Indiana, Arizona, and Georgia, 3 each; New Jersey, California, Oklahoma, North Carolina, Kansas, Washington, and Wyoming, 2 each; and Louisiana, Arkansas, British Columbia, Montana, Maryland, Nebraska, North Dakota, Oregon, South Dakota, Florida, Delaware, and Finland, 1 each.

Disregarding some duplications in nominations, the various members responsible for the applications of new members, were as follows: Lawrence E. Hicks, 126; T. C. Stephens, 11; Mabel Slack, 8; W. M. Rosene, 6; A. F. Satterthwait and Frank Blanchard, 4 each; Charles J. Spiker and Lyndon L. Hargrave, 3 each; the following nine persons 2 each: M. G. Lewis, J. M. Shaver, Lucy P. Kearns, L. Irby Davis, M. M. Nice, Gordon Wilson, Gordon W. Jones, Mrs. W. Bird Rice, and A. M. Bailey; and the following thirty-one persons 1 each: Frederick H. Test, J. W. Aldrich, A. F. Ganier, J. E. Patterson, Edith R. Force, O. A. Stevens, E. L. Knapp, Sidney K. Eastwood, R. W. Sheppard, Dora Moore, G. M. Cook, Donald W. Douglass, Winton Weydemeyer, Clara M. Heising, S. A. Eliot, Jr., Lawrence H. Walkinshaw, John J. Stophlet, Lawrence Bowman, Delos H. Johnson, Francis M. Uhler, Fred R. Zimmerman, J. Van Tyne, L. W. Wing, S. E. Perkins, III, B. C. Cain, W. C. Starrett, W. B. Taber, Jr., Carl W. Rahe, David Damon, Mrs. W. M. Dawley, and Otto M. Creary.

*Revised to the end of December, 1935.

FIG. 9. ALFRED M. BAILEY
First Vice-President

FIG. 10. MRS. MARGARET M. NICE
Second Vice-President
Photograph by Bachrach.

FIG. 11. SAMUEL E. PERKINS III
Treasurer

FIG. 12. F. P. ALLEN
Librarian

FIG. 13. Group at the Annual W. O. C. Meeting, St. Louis, 1935.

With these increases the Club has had a decided net increase in membership. The total number of members lost during the year 1935 from all causes was 122, 1 being Life, 3 Sustaining, 12 Active, and 96 Associate. A considerable number of former members have reinstated during the year. Thus there has been a net gain of 63 members during 1935.

This leaves the present membership of the Club at 784, distributed as follows: Honorary, 6; Life, 11 (2 also are Honorary); Sustaining, 42; Active, 189; Associate, 538. This is the largest total membership in the history of our organization, exceeding by nine members the former high point reached in 1930 at the time of the Cleveland meeting.

The Secretary wishes to take this opportunity to thank the many members who have assisted in the membership campaign, helped with the staging of the annual meeting, or otherwise advanced the work of the Wilson Ornithological Club during the past year. It has been particularly gratifying to have received in all more than 410 letters from the members giving news of their own work, ideas and suggestions on ornithological and conservational topics, or words of encouragement and constructive criticisms of the work being done. It is greatly regretted that the pressure of other duties has made it impossible to answer many of these directly or to reply save by abbreviated note.

Respectfully submitted,

LAWRENCE E. HICKS, *Secretary.*

KEY TO GROUP PHOTOGRAPH OF THE W. O. C. MEETING AT ST. LOUIS, 1935

1, Albert F. Ganier. 2, E. L. Moseley. 3, A. M. Obrecht. 4, Sterling P. Jones. 5, Ann Loftus. 6, Lillian Serbousek. 7, Mabel Slack. 8, A. Marguerite Heydeweiller. 9, Irving Brant. 10, Mrs. Howard S. Benedict. 11, S. E. Perkins, III. 12, Lawrence E. Hicks. 13, Fannye A. Cook. 14, Leonard B. Nice. 15, T. C. Stephens. 16, Mrs. H. J. Taylor. 17, Margaret M. Nice. 18, Edith R. Force. 19, Myra G. Willis. 20, W. K. Butts. 21, Perna M. Stine. 22, Robert B. Gordon. 23, R. D. Book. 24, Roger T. Peterson. 25, W. M. Rosene. 26, Earl G. Wright. 27, Roy V. Kommarek. 28, Jack Stupp. 29, Mrs. A. F. Satterthwait. 30, Miss Phinney. 31, John B. Calhoun. 32, Frederick M. Baumgartner. 33, Walter M. Rosene, Jr. 34, Fremont Arbeiter. 35, Mrs. Myron H. Swenk. 36, L. M. Gates. 37, Mrs. L. M. Gates. 38, Josselyn Van Tyne. 39, M. L. Fisher. 40, R. E. Jordan. 41, Louis M. Weber. 42, Rudolf M. Bennitt. 43, A. E. Shirling. 44, Logan J. Bennett. 45, Ira N. Gabrielson. 46, Paul Bartsch. 47, George O. Hendrickson. 48, Jesse M. Shaver. 49, Myron H. Swenk. Copies of this 1935 photograph may be obtained for forty cents by addressing Mr. A. J. Nolte, 3434 Osage Street, St. Louis, Mo.

REPORT OF THE TREASURER FOR THE YEAR 1935

Receipts for 1935

December 15, 1934, Balance on hand as per last report		$ 842.32
The following was collected as dues from members:		
3 Associate members for 1933	$ 4.50	
13 Associate members for 1934	19.50	
5 Active members for 1934	12.50	
334 Associate members for 1935	501.00	
146 Active members for 1935	365.00	
21 Sustaining members for 1935	105.00	
104 Associate members for 1936	156.00	
43 Active members for 1936	107.50	
12 Sustaining members for 1936	60.00	
2 Associate members for 1937	3.00	
Total collected from membership dues		1,334.00
The following was collected from subscribers:		
1 Subscriber for 1934	1.50	
75 Subscribers for 1935	112.50	
15 Subscribers for 1936	22.50	
40 Part subscriptions and part memberships, etc.	49.67	
Total received from subscriptions		186.17
The following were miscellaneous receipts.		
Back numbers of Bulletins sold	24.75	
Contributed toward publication fund	106.50	
Total miscellaneous receipts		131.25
Total receipts including old balance		$2,493.74

Endowment Fund

December 15, 1934, Balance on hand from last report	$1,442.02
June 1, 1935, interest	18.02
December 1, 1935, interest	.05
	$1,460.09
During the year the Endowment Fund was invested in the following securities:	
June 1, 1935, U. S. Savings Bonds	$ 675.00
June 1, 1935, U. S. Postal Savings 2½% Coupon Bonds	780.00
Balance in savings account, Citizen's National Bank, Boone, Iowa	5.09
	$1,460.09

Disbursements for 1935

Printing four issues of the Bulletin	$1,090.75	
Cost of halftones, cuts, etc.	151.82	
Cost of reprints	3.17	
Other expenses in Editor's office	151.45	
Total publication costs		$1,397.19
Expenses in Secretary's office	133.01	
Printing programs, convention expense, etc.	119.21	
Expenses in Treasurer's office	49.25	
President's postage expense	4.84	
18 subscriptions refunded on account of error	20.95	
Check returned and not made good	1.50	
Ecological Society of America	1.00	
U. S. check tax on two checks at 2c	.04	
Total general costs		329.80
Total disbursements for year 1935 (see itemized sheet)		$1,726.99
Balance on hand December 20, 1935		766.75
Total		$2,493.74

Respectfully submitted,

W. M. Rosene, *Treasurer.*

Ogden, Iowa, December 21, 1935.

Report of the Auditing Committee

The undersigned have examined the report of the Treasurer of the Wilson Ornithological Club for the fiscal year ending December 21, 1935, and vouchers accompanying the same, and have found them correct.

Respectfully submitted,

Myron H. Swenk.
Samuel E. Perkins, III.

REPORT OF THE LIBRARIAN FOR 1935

December 23, 1935.

I have the honor to present herewith the fifth report of the Librarian of the Wilson Ornithological Club.

EXCHANGES. During the past year the library has received regularly on exchange *Iowa Bird Life* and the University of Iowa *Studies in Natural History*. The value of this material can not be overemphasized. The exchange of the BULLETIN for not only domestic but also foreign journals is of inestimable scientific value to the Club and its library in the field of research. The exchanges may quite naturally become the very backbone of the research library.

REPRINTING. On the matter of reprinting out-of-print numbers of the BULLETIN some progress has been made. With funds available from the sale of back numbers, one hundred copies of BULLETIN No. 18 (January, 1898) were made by the lithoprint process. This BULLETIN is available for $1.00 with a 20 per cent discount to members.

STOCK. During 1935 no stock of BULLETINS was received.

BOOK PLATE. As yet no book plate has been adopted by the Club although several have been submitted.

DONORS. The Librarian takes pleasure in acknowledging gifts to the Club Library from the following persons during 1935: Mr. Ralph Beebe, Ecorse, Michigan; Mr. S. T. Danforth, Puerto Rico; Mr. Samuel C. Harriot, New York, N. Y.; Mr. Lawrence Hicks, Columbus, Ohio; Mr. Leon Kelso, Washington, D. C.; Mr. O. A. Stevens, Fargo, N. D.; Mr. Warren J. Willis, New York, N. Y.

STATISTICS, A FIVE-YEAR SUMMARY. The gifts to the library for 1935 total twelve bound volumes and ninety separates, reprints, and unbound numbers of periodicals. This makes a total for the five-year period of the existence of the library of 190 bound volumes and 1477 separates.

	Donors	Bound Volumes	Pamphlets
1931	13	54	750
1932	7	66	97
1933	5	36	298
1934	3	22	242
1935	7	12	90

As an officer of the Wilson Ornithological Club I view with alarm this decided falling off of our accessions. It may be readily observed that we have never had as poor a year as 1935. Another unfortunate aspect of the situation lies in the fact that there were no new donors during the past year. Delighted as we are with yearly contributions from old friends of the library, it is nevertheless gratifying to have new names to add to our list of donors. Out of our entire membership it is amazing that only fifteen people have been sufficiently interested to contribute to the library over the entire five-year period. Fortunately eight of these have contributed more than once. Mr. Willis has contributed for four years, Mr. O. A. Stevens and Mr. Kelso have contributed for three years, while Mr. Beebe, Mr. Danforth, Mr. Summer, Mr. Harriot, and Mr. Hicks have contributed for two years.

All members of the Wilson Ornithological Club should become much more library minded and the time to start is now with a contribution.

Respectfully submitted,

F. P. ALLEN, *Librarian.*

EDITORIAL

THE TWENTY-FIRST MEETING of the Wilson Ornithological Club was held at St. Louis, Missouri, on December 30 and 31, 1935. This was the second meeting in St. Louis. The first meeting, in 1919, was marked by the presence of Mr. Otto Widmann. While our second St. Louis meeting has been exceeded in the matter of attendance, yet the program continued to maintain a high level of scientific interest. Both of our St. Louis meetings have been with the American Association for the Advancement of Science. In 1919 all sessions of the Association were held under one roof, the Soldan High School. This was found to be a most convenient and satisfactory arrangement, although the meeting room to which we were assigned at that time would hardly have accommodated the audiences we had in 1935. At this last meeting of the A. A. A. S. the various sessions of the forty-seven participating societies were scattered from Dan to Beersheba, and consequently most of us remained in one place. The W. O. C. was comfortably housed and conveniently located. We were much indebted to our Local Committee for the comfort and precision with which our meeting was conducted.

The 1936 meeting of the W. O. C. will be held in Chicago, at the Chicago Academy of Sciences, on November 27-28. In 1937 the meeting will be held at Indianapolis, with the American Association, during the last week in December.

The following figures give a statistical summary of the organization for the past five years.

	Cleveland 1930	New Orleans 1931	Columbus 1932	Pittsburgh 1934	St. Louis 1935
Local Attendance	41	11	92	49	24
Out-of-town Attendance	122	81	65	129	88
Total Attendance	163	92	157	178	112
Dinner Attendance	98	35	69	72	70
Titles on the Program	33	27	35	39	38
Honorary Members	7	7	7	6	6
Life Members	7	7	10	12	11
Sustaining Members	58	57	75	44	42
Active Members	227	214	175	154	189
Associate Members	479	461	469	507	538
Total Membership	775	744	734	721*	784
New Members Added	241	162	113	112	141
Pages in BULLETIN	312	334	256	288	318
Total Income	$2451	$2686	$2191	$2230	$2494
Fiscal Balance	$675	$731	$547	$842	$767

It was with much regret that the Club accepted the resignation of Mr. W. M. Rosene as Treasurer. Mr. Rosene's services in caring for our funds, without loss, through the perilous depression days can not be too highly appreciated. And we may say that Mr. Rosene has won a high place in the esteem of all members of the organization. Mr. Samuel E. Perkins III, of Indianapolis, was elected to the office of Treasurer, succeeding Mr. Rosene. We are confident of Mr. Perkins' ability and desire to maintain the high efficiency in this office.

It was a general agreement among officers and members at this meeting that an effort would be made in 1936 to eclipse all previous records in the development

*This number in last year's summary was in error by 100.

of the Wilson Ornithological Club. All members are therefore urged to be ready to give assistance when called upon, and to volunteer whatever aid may be within their power to give toward this end. The objective is to reach or exceed two hundred new members. The Secretary can tell us that this goal can not be reached without some hard work. Let us help him, therefore, in every possible way to report success at the next annual meeting. The Editor promises to increase the size of the WILSON BULLETIN as rapidly as our finances will permit.

We shall be glad to have our readers send us any notes on the effects of the past cold winter season on the bird life.

Dr. Tracey I. Storer, of the University of California, has recently completed his file of the WILSON BULLETIN. Prof. George M. Sutton, of Cornell University, is anxious to secure any or all of the following numbers to complete his file of the WILSON BULLETIN: Serial number 11, 1896; 12, 1897; 15, 1897; 19, 1898; 20, 1898; 22, 1898; 23, 1898; 25, 1899; 26, 1899; 27, 1899; 29, 1899; 30, 1900; 34, 1901; 35, 1901; 36, 1901; 37, 1901; 46, 1904; 60, 1907; 65, 1908; 94, 1916; 97, 1916.

We have reached the conclusion that it is bad practice to change the original paging in the reprinting of articles. Retention of the original pagination enables one to make a citation from a reprint. If the author wishes to omit the running magazine heads with original folio numbers perhaps it would be better to omit page numbers entirely. The alternative is to authorize the printer to reset the folio line with the original folio numbers only.

THERE WAS HELD at Washington on February 3-7, of this year, the organization meeting of the North American Wild Life Conference. From the "invitation" and prospectus it is not very clearly determined who were expected to attend. Our "invitation" was received less than a week before the opening date of the conference. So we presume that such general invitations were more or less perfunctory, and that the conference was a more or less set-up affair. A national wild life conference of this kind is much needed, and it should be democratic rather than bureaucratic. We doubt if a hot-house convention of this sort will win general support. It is not representative. We believe it would be more effective to organize a half dozen or more regional conferences, the latter to elect delegates to a national conference. Then the national conference would have the force of representation. Wisdom or power superimposed from above is bound to be less effective than the same developed and organized from below.